INSTRUCTION BULLETIN

& MAINTENANCE MANUAL

FOR CTD A500

MODELS A500, A500M

CTD MODEL NO: _____

CTD SERIAL NO: _____

MANUFACTURE DATE: _____

DISTRIBUTOR PURCHASED THROUGH:

(IF ANY) _____

CTD MACHINES
2300 East 11th Street
Los Angeles, CA 90021-2817
Tele (213) 689-4455 • FAX (213) 689-1255
World Wide Web: **http://www.ctdsaw.com**
e-mail: **ctdsaw@ctdsaw.com**

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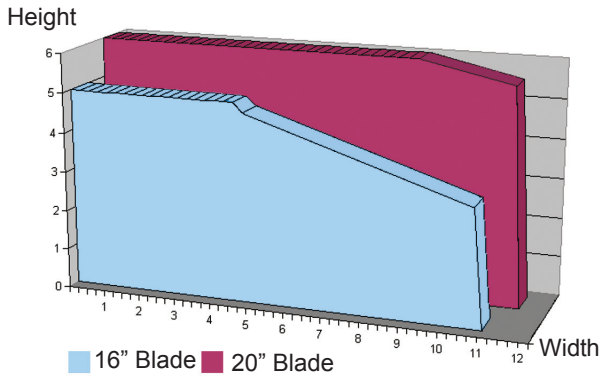
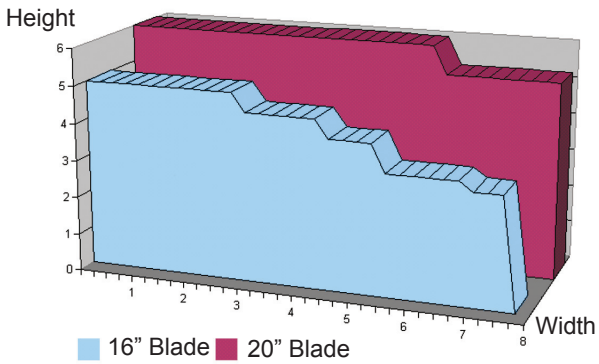
Machine Requirements:

MODEL NO:_____ SERIAL NO:_____



16" Blade - 90° Cutting Capacities A500, A500M
20" Blade - 90° Cutting Capacities A500, A500M



16" Blade - 45° Cutting Capacities A500. A500M
20" Blade - 45° Cutting Capacities A500, A500M

Pneumatic Requirements: (if applicable) 2 CFM per 10 strokes at 75 PSI (.086 cubic meters at 5.4 kg/cm2)

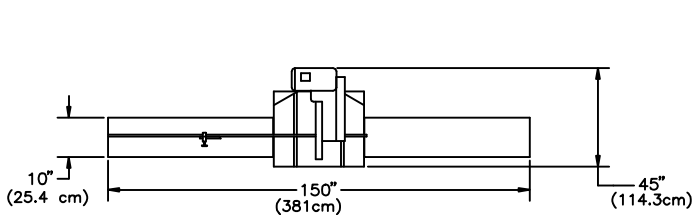
Dust Collection Requirements: 1100 CFM at 4" outlets

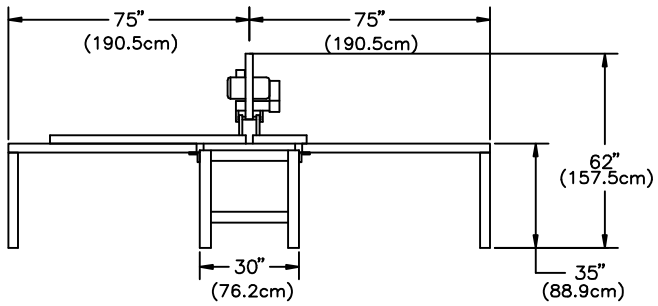
Electrical Requirements: Based on one motor per machine

Motor Size	Required Amperage	Breaker Needed
7-1/2 H.P. 3 Phase, 230 Volt	20 amps	30 amp
7-1/2 H.P. 3 Phase, 460 Volt	10 amps	20 amp
10 H.P. 3 Phase, 230 Volt	26 amps	40 amp
10 H.P. 3 Phase, 460 Volt	13 amps	20 amp

Cutting Tool Requirements: Heavy, rigid plate blades.
16" blades: .120 to .130 plate 20" blades: .150 to .160 plate

Space Requirements





Installation and Set Up:

The CTD saw you have purchased is designed to cut wood, aluminum, plastic and steel, with of course the proper blade and conditions. For the material you are cutting, please refer to the cutting instructions for each material type. The 400 Series machines use a NEMA 213T or 215T, 7-1/2 H.P., 1725 RPM, 60 Hertz TEFC Motor. CTD uses a speed-up so that the blade will run at approximately 12,500 SFPM on a 16" blade and 14,000 SFPM on a 20" blade.

IMPORTANT: Before operating saw, please be sure to read the **"SAFETY INSTRUCTIONS TO THE OPERATOR"** (see Page No. 6).

Note: The floor stand must be shimmed, leveled and bolted to the floor, or framed in to eliminate vibration. Use holes provided in bottom of floor stand. All machines have been completely assembled at the factory, then disassembled for shipment.

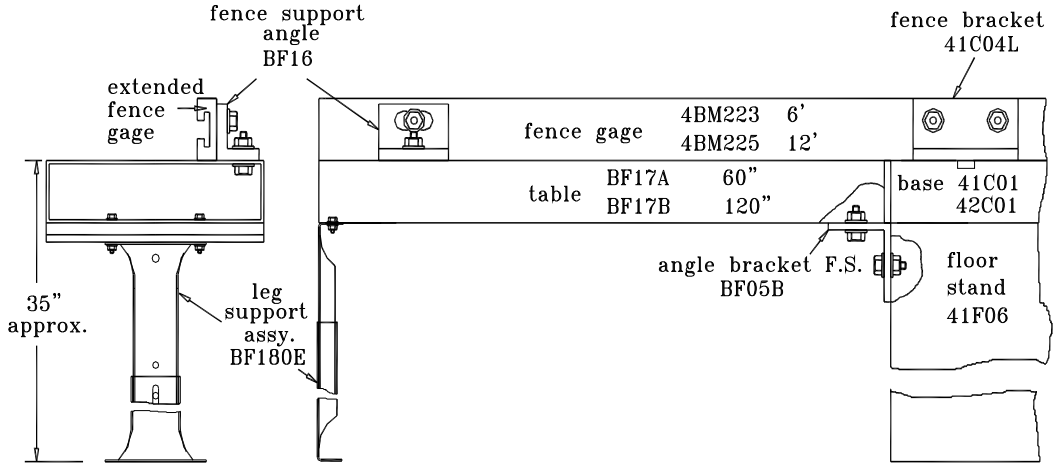
Assembly of Support Tables and Measuring Gages:

Standard Machine—The standard model has been completely assembled. Fences are set at the centerline of the blade (see Diagram "D" on Page No. 4). Adjust fences forward if necessary for your particular material. The machine base must be level. The incoming material and outgoing material must lay flat on the machine base (see Diagram "F" on Page No. 8).

Assembly of Tables to Floor Stand:

1. Assemble leg to support table with 3/8-16 bolts and nuts provided. Turn table upside down and attach leg to tablewith leg rising vertically. *Note:* The hole in the table (when mounted properly) should be toward the back of the table and far away from the blade to attach Fence Support Angle, P/N BF16 (see Diagram "A").
2. Attach Table, P/N BF17 to machine floor stand on Angle Bracket, P/N BF05C. Use 3/8-16 bolts and nuts provided on angle bracket.

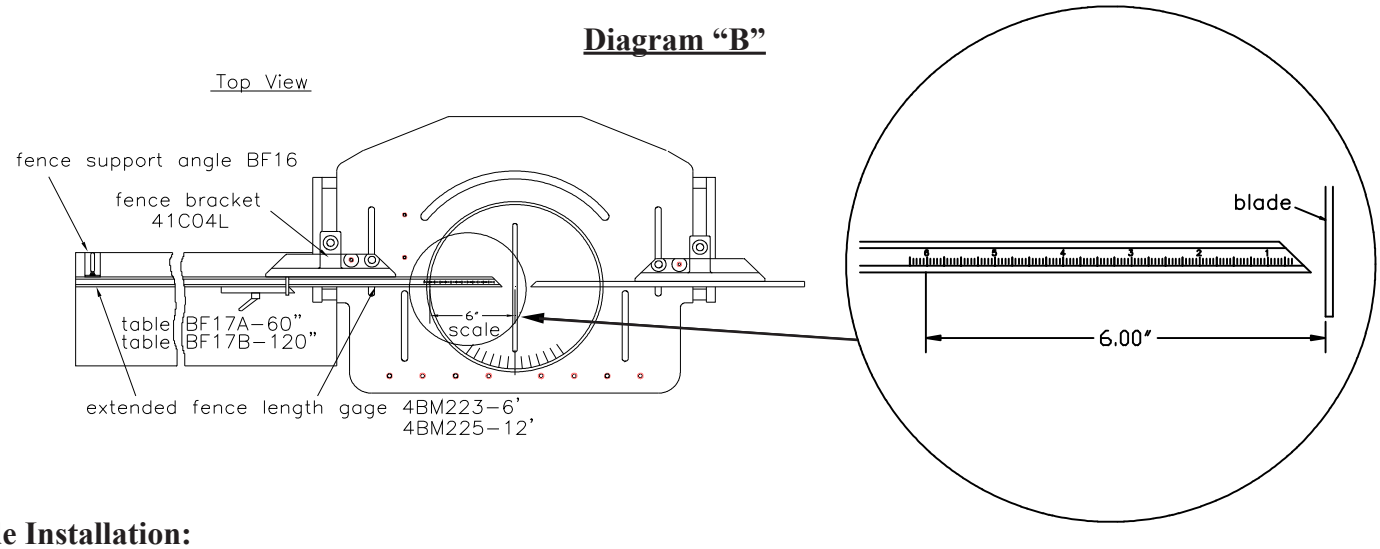
Diagram "A"



Attaching Extended Fence Gage:

1. Place Extended Fence Gage (5/8 x 3-1/2" material) on table. Bolt to fence bracket with screws provided. Adjust fence gage so measurement rule is correctly set:
   A. With a scale or ruler touching the side of the tips of the blade, measure a distance away from blade. Be sure the ruler and the tape on the fence gage read the same. This may be visually deceiving. Use a 90° square to check.
   B. Adjust fence, left to right, as necessary.
   C. Both fences, left and right, must be in perfect alignment. Use a long straight edge for this purpose. (see Diagrams "B" below and Diagram "E" on Page No. 7).

Diagram "B"



Blade Installation:

Before setting blades on spindle, *always shut off or disconnect air supply*. With motor **OFF** and power disconnected, loosen wing nut on Bottom Blade Guard Strap, P/N 6F07B (see Diagram "D" below) and swing down. Now, lift main blade guard, exposing Spindle Assembly.

1. Remove Spindle Nut, P/N 4B1P48 and Outer Flange, P/N 4BM43. If necessary, hold blade in hand with rag or lower blade into a piece of wood. Push down with a wrench.
2. Place blade on spindle with tips pointing down. Make sure Slinger (inner flange), P/N 4BM44, and blade surface are ***clean*** before putting blade on spindle. This is a critical surface and is ground within .0005 flatness. Any debris or dust will wear this surface. Wipe both surfaces (blade and slinger) with a clean rag.
   A. The blade must **ALWAYS** rotate to the rear of the machine on the underside of the blade (see Diagram "D"). ***Always check rotation before cutting a piece of material.***
3. Replace Outer Flange, P/N 4BM43 and Spindle Nut, P/N 4B1P48 as before and tighten (refer to Diagram "C"). Pull up with wrench. Do not over-tighten. Snugging the blade is all that is necessary.

If blades were purchased from CTD, your machine has been set with your blades. If not, blade diameters may vary. Check to see if the blade contacts the base or disc in the down position. If repositioning is necessary, adjust down stop bolt located under Arm Casting, P/N 4BC01 (refer to Page No. 11).

Diagram "C"

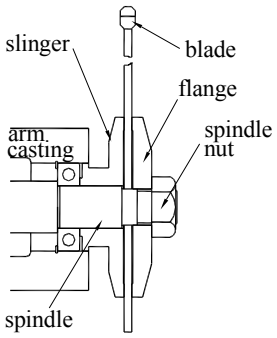
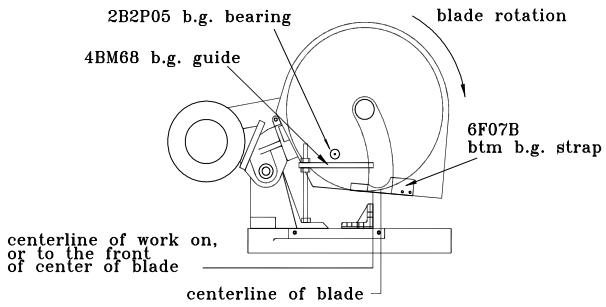
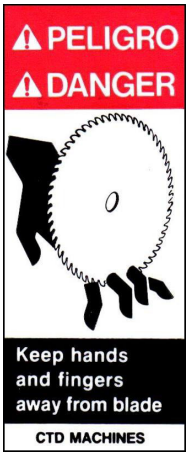


Diagram "D"


2B2P05 b.g. bearing
blade rotation
4BM68 b.g. guide
6F07B btm b.g. strap
centerline of work on, or to the front of center of blade
centerline of blade



*These machines are general purpose in their design, therefore the **user** should attach any additional guarding to the blade guard or table base if the cutting application causes **unsafe blade exposure**.*

This label is attached to the blade guard. ***Never put hand or fingers near or under the moving blade.*** Use a piece of wood to remove short pieces from saw.

Electrical Installation:

The CTD A500 Series Cut-Off Saws use 7-1/2 H.P. three phase 1725 RPM, 60 HZ TEFC (totally enclosed fan cooled) motors on a NEMA 213T or 215T Frame. CTD uses a speed up drive so that the blade will run at approximately 2900 RPM for a 16" blade and 2700 RPM for a 20" blade. Optional motors are 10 H.P. & 15 H.P.

Electrical installation should be performed by a qualified and certified electrician. A *lock-out* or *disconnect switch* is located on the magnetic starter between your main electrical panel and the machine. This disconnect switch is used to shut off power to the machine and should be used whenever the blades are changed or at any time the machine is serviced and the blade is exposed. A Magnetic Starter (OSHA required) is standard on the machine. The starter protects the motor from overheating and will not allow the motor to restart itself after power outages or undervoltage situations.

Electrical Installation of Power to Starter by a Qualified Electrician:

All wiring from the motor to the starter has been completed and tested at the factory several times. The voltage has been clearly tagged. *DO NOT CONNECT ANY VOLTAGE THAT IS DIFFERENT THAN THE TAGGED VOLTAGE, AS THIS MAY CAUSE SEVERE DAMAGE AND DANGER.* Consult the factory if any changes are needed. Bring power lines to the top of the Magnetic Starter. Use dust proof connectors if available.

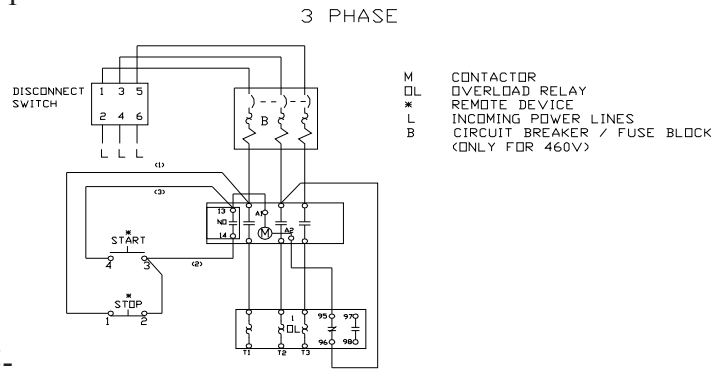
Three Phase Motors:

Connect incoming power line leads to L1 (line 1), L2, and L3. (See Wiring Diagram for Three Phase Motors below.) Green ground wire must be grounded to enclosure. *Be sure to check rotation* as polarities may be different. The blade must rotate down and to the rear on the underside of the blade (see Diagram "D" on Page No. 4). If a change in rotation is necessary, reverse any two of the incoming power wires. *Example: If the blades are running backwards and incoming wires are connected White L1, Black L2, and Red L3, switch the Black wire with the Red so that Black is connected to L3 and Red is connected to L2. This will change the motor to rotate properly.*

Motor Load Amperes

Motor Size	208 Volt	230 Volt	460 Volt
7-1/2 H.P., 3 Phase	21.5 amps	20 amps	10 amps
10 H.P., 3 Phase	28 amps	26 amps	13 amps

Wiring Diagram for Magnetic Starter



Safety Instructions to the Operator:

1. *KNOW YOUR CTD SAW.* Read this instruction manual carefully. Learn the operation, application, and limitations, as well as the specific potential hazards peculiar to this machine.
2. Avoid accidental starting. Make sure disconnect switch is **OFF** before plugging in power cord. A Magnetic Starter (which is OSHA required by user) with a disconnect switch is provided standard on the machine to give the operator added protection.
3. *Always* use a plug equipped with a ground.
4. *Always* keep blade guard in place. Do not wire-up or chain-up, so that blade is exposed.
5. Be sure all unnecessary tools are removed from machine before turning on power.
6. Use safety goggles. Also use a face or dust mask if operation is dusty.
7. Support work. To maintain control of work at all times, it is necessary that material be level with cutting surface.
8. Wear proper apparel. Do not wear loose clothing or jewelry. Do not wear a tie or gloves. These items can get caught in the moving parts of the machines.
9. Do not over-reach. Keep your proper footing and balance at all times.
10. Maintain your machine in top condition. Use proper blades. Clean machine weekly for proper maintenance.
11. Keep work area clean. Cluttered areas, benches and slippery floors invite accidents.
12. Avoid dangerous environments. Keep work area well illuminated.
13. Wear ear protection if exposed to long periods of very noisy shop operations.
14. Keep visitors away. All visitors should be kept a safe distance from work area.
15. Do not force the machine. The saw will do a better job and be safer to operate at the speed for which it was designed. Forcing the saw can be very hazardous to the operator.
16. Use recommended accessories. Use of other accessories may be hazardous. Use this instruction manual or consult CTD for the proper accessories available.
17. Do not drown the blade using a steady stream of coolant when cutting non-ferrous material. Only spray the work to cool it.
18. Be sure to use the proper blade for the particular material to be cut.
19. Disconnect power cord before adjusting, servicing, and before changing belts, also for installing accessories.
20. Safety is a combination of operator *COMMON SENSE* and *ALERTNESS* at all times when the machine is being used.
21. *WARNING!!! DO NOT ALLOW FAMILIARITY (GAINED FROM FREQUENT USE OF YOUR SAW)TO DULL YOUR AWARENESS!! ALWAYS REMEMBER THAT A CARELESS FRACTION OF A SECOND IS SUFFICIENT TO INFLICT SEVERE INJURY!!*

How to Operate the A500 Series Automatic Cut-Off Saws:

Before operating the machine, please read the " SAFETY INSTRUCTIONS TO THE OPERATOR" above. Other important information and features need to be learned before operating the machine.

Rotation:

The blade must rotate to the rear of the machine on the underside of the blades (see Diagram "D" on Page No. 7).

Blade Guard:

The blade and belt drive are enclosed. *ALWAYS* keep Blade Guard and machine enclosure closed during the cutting cycle.

Positioning the Work:

Fences should be set so that the centerline of the work is either to the front, or on the centerline of the blade (see Diagram "D"). Fences must be adjusted so that short pieces cannot be trapped between the blade and the fences. Fences must be in line with each other—front to back (see Diagram "E"). If very short pieces are to be cut, a piece of wood or aluminum can be fixed to the table to make a sub-table, which will stop pieces from being trapped between the blade and the saw slot (see Diagram "G" on Page No. 8).

Angle Adjustments on Model A500M:

To change the angle:

1. Pull back spring loaded mitre locking pin & handle assembly & rotate to the right or left. This prevents the pin from engaging. Mitre lock pin & handle will lock in the open position.
2. Make sure mitre lock down bolt (located in the center of the pivot bracket-see Diagram "D" & "E") is loosened.
3. To lock in at preset angles, rotate sawhead and disc near the desired angle aligning with zero mark on base.
4. Turn mitre locking handle to center position, and the spring loaded pin & handle will automatically engage into preset angle settings. The preset angle settings are 45°, 30°, 22 ½°, 15°, 0° on both sides of the centerline or zero point. ***Do not let the spring loaded mitre locking pin & handle engage in several degree settings as you rotate the mitre base disc. This will cause excess wear on preset angle settings.***
5. For all angles that are not preset, follow instructions under #1 to lock handle in the open position. Simply align degree quadrant on disc with zero mark on base and tighten down intermediate mitre lock handle located in base.

Clamping and Work Slippage:

The work must never be allowed to move or vibrate as it is being cut. When the work is positioned against a stop, it must be clamped either by hand holding or by pneumatic air clamps. *Never allow unclamped work between the blade and the stop,* as the blade can grab the material and throw it—thereby causing damage to the blade, the machine, and possibly harming the operator. CTD offers both Horizontal Air Vises and Vertical Clamps. The Horizontal Air Vise pushes the material backwards against the rear fence. Vertical Clamps hold the material down, against the table base. The clamps are actuated prior to the saw head. by pushing a hand valve. Check your material for squareness using a 90° square. Material that is out of square will move when it is cut, causing irregular mitres. (See "IRREGULAR MITRES" on Page No. 14.) Additional tooling may be needed. Consult factory for more information.

Cutting the Material:

The material to be cut (both the incoming pieces and the cut pieces) must lay flat on the table base, or the blade may bind the material. ***THIS CAN DAMAGE THE BLADE OR THROW THE CUT PIECE OUT OF THE SAW, POSSIBLY HARMING THE OPERATOR*** (see Diagram "F").

Diagram "F"

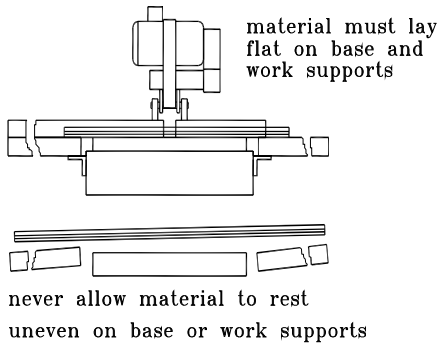
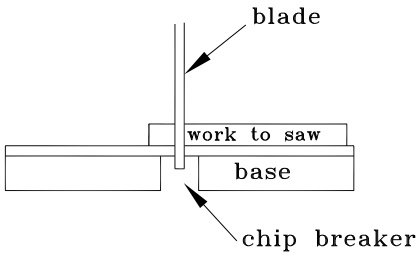
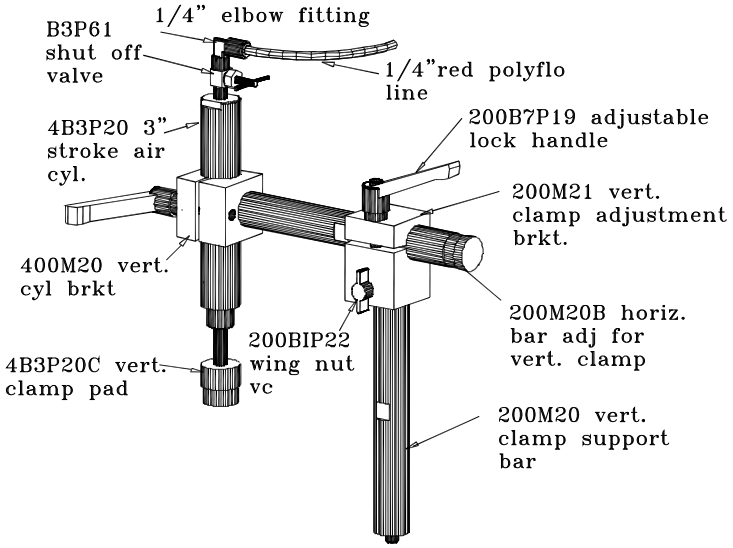


Diagram "G"



Vertical Clamp Assembly



Removing Material From the Blade:
If the machine is stalled while cutting, immediately shut saw off and disconnect power. ***NEVER attempt to free the blade while the motor is still on.*** If a piece is bound on the blade, do not attempt to raise the blade out of the material. Instead, tap the piece down on both sides of the blade with light pressure until the piece has freed the blade.

Cutting Wood:
While wood is generally soft and simpler to cut than aluminum, it requires that the material be held in place as the blade passes through the material. CTD suggests using a Carbide Blade with Alternate Top Bevel (AT) for lighter wood sections and picture frame mouldings. This type of blade gives the finest of finishes. No *ONE* blade will cut all material perfectly. High lacquers or jesso covered moulding may require a special modified blade for best results. Consult factory. *Never use a **wood** blade to cut **aluminum***, as it will chip and fracture the carbide tips of the blade.

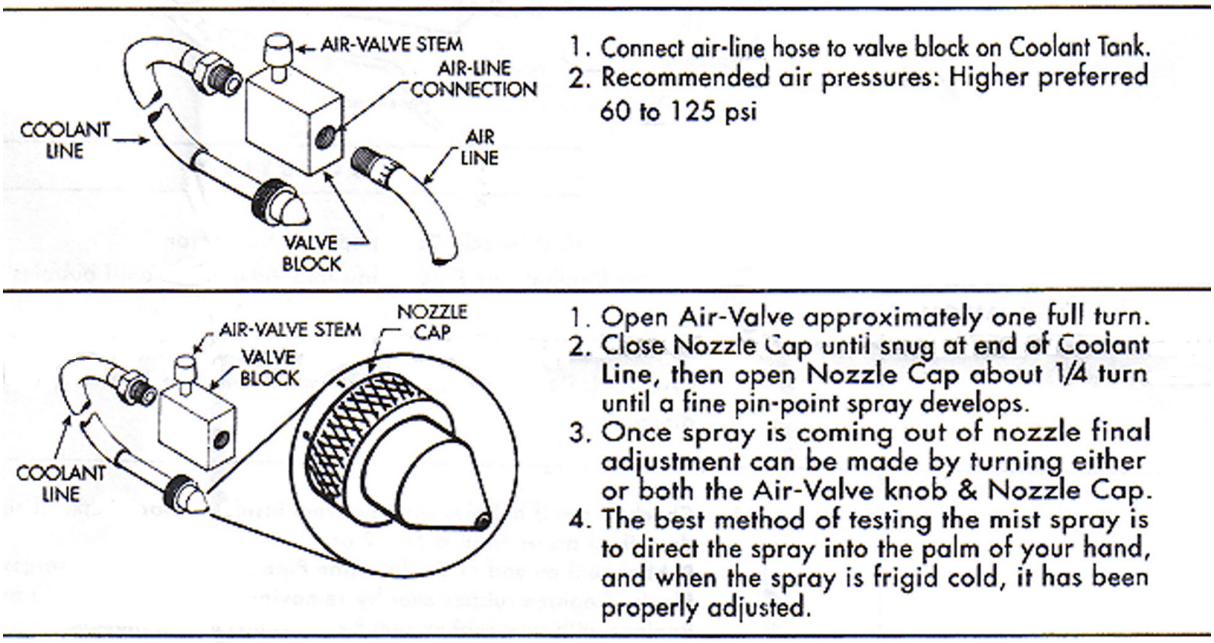
Cutting Plastic; High Lacquers,or jesso Mouldings:
Plastic can be cut as easily as wood on the A500 Series Saws. H.L. & Jesso Mouldings can quickly dull carbide blades ground for wood. It is important to clamp the material as close as possible to the blade and support it by use of fixtures. CTD offers Horizontal and Vertical Clamps for this application. Additional tooling may be required.

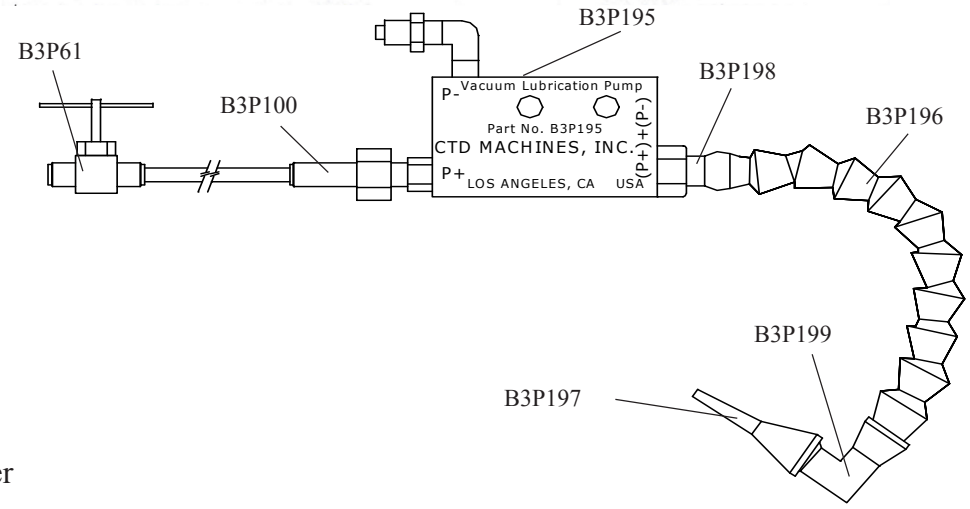
Cutting Aluminum:
As with cutting any material, it is important that aluminum be clamped properly. Precision blades are required for accurate cutting. CTD suggests and uses a Triple Chip Grind on all its non-ferrous Carbide Blades. When cutting aluminum, or other non-ferrous materials, it is essential that the blades be lubricated with a Sawblade Lubrication System or other blade lubricating system for the finest finish. See "Sawblade Lubrication System" on the next page for more details.

Combination Blades:
Any combination blade is basically an aluminum cutting blade. Significant blade life in between sharpenings will be lost if a blade is used for cutting both aluminum and wood. The amount of production for either wood or aluminum should be the determining factor in the assessment of the particular blade type to be used. Please consult factory.

Sawblade Lubrication System:

The Sawblade Lubrication System is used when cutting aluminum or other non-ferrous materials. This system normally uses a Water Soluble Oil mixture of *10 parts water to one part oil*. The system operates by siphoning the lubrication up the line to the spray nozzle. Any air leak will cause inconsistent fluid flow to the spray nozzle. ***BE SURE*** your fluid is free from chips and other debris. A fluid container supplied with the machine contains a One-Way Check Valve, Part No. B3P96 at the end of the clear fluid line. This check valve helps to hold the lubrication in the line. However, after a couple of minutes, the lubrication or oil will back-flow into the container. Priming of the system may be necessary if the machine has been standing without use. The system may be shut off by closing the toggle valve next to the vacuum pump. The fluid must be clean or the Vacuum Pump will clog.


AIR-VALVE STEM
AIR-LINE CONNECTION
COOLANT LINE
AIR LINE
VALVE BLOCK
1. Connect air-line hose to valve block on Coolant Tank.
2. Recommended air pressures: Higher preferred 60 to 125 psi
NOZZLE CAP
AIR-VALVE STEM
VALVE BLOCK
COOLANT LINE
1. Open Air-Valve approximately one full turn.
2. Close Nozzle Cap until snug at end of Coolant Line, then open Nozzle Cap about 1/4 turn until a fine pin-point spray develops.
3. Once spray is coming out of nozzle final adjustment can be made by turning either or both the Air-Valve knob & Nozzle Cap.
4. The best method of testing the mist spray is to direct the spray into the palm of your hand, and when the spray is frigid cold, it has been properly adjusted.



Part No.	Description
B3P195	Vacuum Pump
B3P196	Link Tubing
B3P197	Nozzle Fitting
B3P198	1/8” NPT Adapter
B3P199	1/4” Elbow
B3P61	Shut Off Toggle Valve
B3P100	1/8” NPT to 1/4” tube fitting
B3P96	Check Valve
B3P97	Lubricant Container
BF30	Bracket for SLS

CTD Bio Lubrication System:

The CTD biodegradable lubrication system operates by pulse spraying a minute amount of biodegradable lubricant directly on to the saw tooth of the blade in time-measured increments. The majority of the lubricant then dissipates with the heat of the cutting action. Chips coming off the blade are hot and dry, and are more easily collected. (See specific instructions included with system.)

Guarding:
The belt drive is completely enclosed with a fabricated guard. The blade guard coversand the machine shield must be down and closed for the machine to cycle through the cut. The left and right hinging doors must be closed and locked before any cutting should take place. The operator ***must not be exposed to an unguarded blade.*** The hands or fingers must **never** be allowed to come in close proximity to the blade—for certain, ***never under the blade.*** Cut off pieces that are short must be removed with a piece of wood or an air blast.

Fences or Back Stops:
The CTD A500 saw is provided with accurately machined fences. This feature allows the operator to easily adjust the position of the fences for the best, safe condition. (see "Position of Work" below). It is essential that all fences be adjusted front to back, in the same plane. The fences must also be adjusted so that the shortest cut off piece will not be able to slip between the blade and fence. Likewise, short pieces must not be allowed to slip between the blade and the slot in the base. Danger to the operator and blade may result if either of these situations are allowed to occur.

Position of Work:
The fences must be set so that the centerline of the work is either to the front or on the centerline of the blade. If the work is cut on, or to the front of the centerline of the blade, the machine is absolutely safe—even if the motor is overloaded and the blade is stalled. The action will drive the work down and to the rear. If the material is set behind the centerline, there is a chance of the material being lifted up by the cutting action.

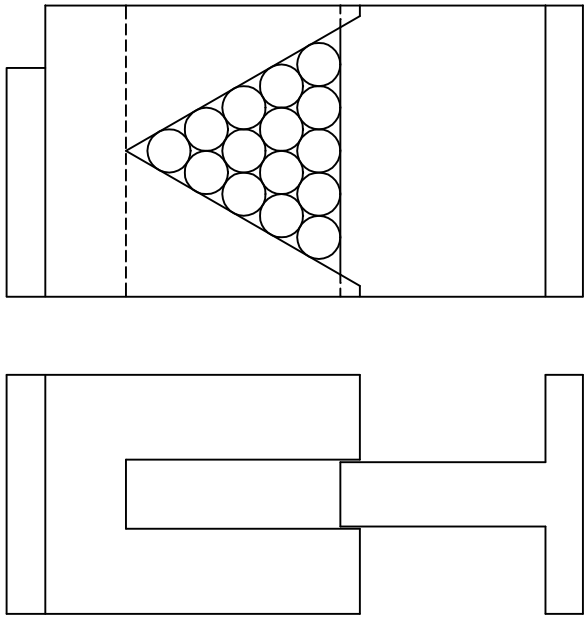
Material Not Flat on Table:
It is necessary that the material lay flat on the table. If long material is to be cut off, the conveyor or work supports must be in exact alignment with the top of the table. If the stock supports are above or below the table, the material will bind the blade, slip or rise up as it is being cut. All back stops or fences must be in the same plane, or when the material is cut, it may tend to slip or move, causing inaccurate cuts.

Clamping and Work Slippage:
The work must never be allowed to slip as it is being cut. Due to the wide variety of work, clamping requirements vary considerably.

Clamping:
In the cutting of aluminum extrusions, often times thin legs or projections must be properly supported to avoid vibrations. Also, round materials must be securely clamped. Jaws for the vise clamps may be shaped to fit the contours of the individual piece, thus eliminating clamping and feeding problems. The rear jaws of the A480E vises have three positions. The front and rear jaws can be set 12" apart at the widest setting. The positioning of the front jaws is limited by 3" travel of the cylinder shafts. However, they are adjustable another 3" in slots using lock down bolt. (See Diagram C #123 on Page No. 28).

SUGGESTED SPECIAL TOOLING FOR CUTTING ROUNDS ON A500

Drill and tap to suit Front and back Jaws



Blades:
High speed cut-off machines are a variation of a milling machine and the same principles concerning the cutter apply. Regardless of the precision built into the machine, it will not function well unless it is used in conjunction with sharp blades, designed for the specific job of cutting to be accomplished.

Cutting of Aluminum and Non-Ferrous Metals:
High speed sawing of aluminum and non-ferrous metals is the most economical and accurate method devised to date. Milling machine tolerances can be easily held along with extremely fine surface finishes—down to 40 RMS under ideal circumstances.

Carbide Blades:
Carbide Blades have proven themselves over the last several years to be, by far, the most economical for production cutting. Carbide Blades must be handled with extreme care, as they are extremely brittle and can be easily damaged. The tips are brazed to a carbon steel plate, which has a tooth configuration machined into it. The blades can be repaired and retipped—even the teeth and the plate can be rebuilt to bring the blade up to its original condition. The number of teeth will vary considerably depending on the material to be cut. However, for aluminum extrusions, a 96 tooth blade is normally used. For the cutting of heavy extrusions or solid stock, usually from 40 to 60 teeth should be used. The kerf loss of the carbide blades is approximately .150 for a 16” blade, or .180 for a 20” blade.

For cutting hard wood sections, such as hard rock maple, we recommend a 100 tooth special trim design blade. This blade gives a fine, smooth finish to the cut piece. Blades must be sharpened regularly if fine finishes are required.

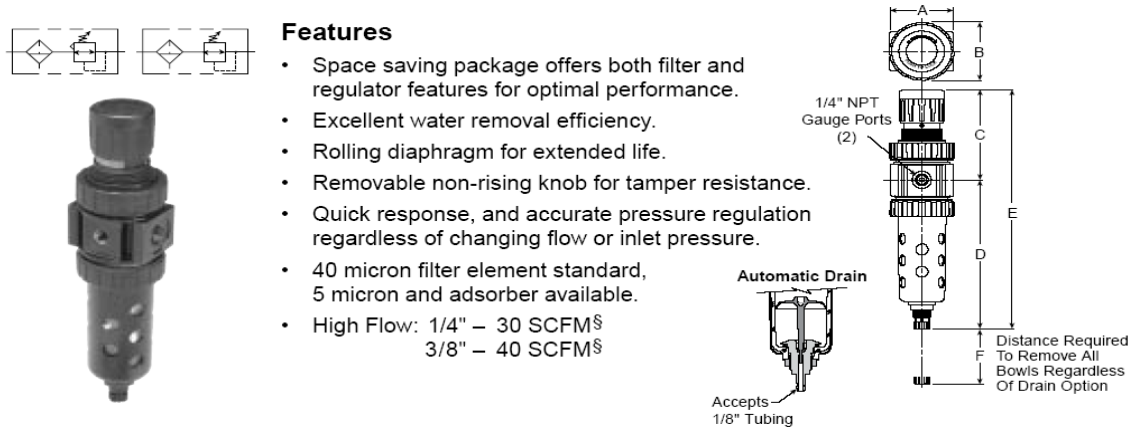
Air Supply:
The air supply must be turned off and all electrics disconnected before making adjustments on the power feed. A working pressure of 75 PSI (pounds per square inch at 5.4 kg/cm2) is required. An industrial-type compressor of at least 5 CFM (cubic feet per minute) is recommended. An additional 3 CFM is required for Spray Mists. A conveniently located valve should be supplied by the user to shut off the air line. **Arms should be raised or lowered *by hand* when setting up machine.** The machine must use clean, filtered air. The speed of descent of the saw head will vary if the air pressure varies.

FR:
An Air Filter/Regulator installed ahead of the air inlet to the machine. This system helps prevent foreign material from entering the system. The FR is comprised of two different components.

1. The Air Filter Bowl is located on the left side and is provided with an automatic drain. This collects and then releases foreign matter and condensation collected by the air filter.
2. The Pressure Regulator, which is located on top of the air filter, controls the amount of air pressure allowed into the system. An operating pressure of 75 PSI @ 5.4 kg/cm2 is required. (This is set at the factory.)

All air cylinders on the saw are "Lubed for Life"; and do not require a lubricator. All A500 series miter saws are equipped with an air cushion beneath the pivot bracket. When the knob in the front right corner of the table base is switched on, the resulting cushion of air beneath the pivot bracket facilitates movement of the head to different mitering positions.

Air Filter/Regulator


Features
• Space saving package offers both filter and regulator features for optimal performance.
• Excellent water removal efficiency.
• Rolling diaphragm for extended life.
• Removable non-rising knob for tamper resistance.
• Quick response, and accurate pressure regulation regardless of changing flow or inlet pressure.
• 40 micron filter element standard, 5 micron and adsorber available.
• High Flow: 1/4" – 30 SCFM§ 3/8" – 40 SCFM§
A
B
1/4" NPT Gauge Ports (2)
C
D
E
F
Distance Required To Remove All Bowls Regardless Of Drain Option
Automatic Drain
Accepts 1/8" Tubing

Trouble Shooting the Pneumatic System for Downfeed of Saw Head:
If the Air Feed no longer has smooth action, check the Hydrocheck oil level. See separate instructions on Hydrocheck.. If there is no Speed Control, the Hydrocheck may need oil. Consult factory. If air is leaking from the bottom of the cylinder, replace Cylinder with Part No. B3P306 or P/N B3P308.

4-Way Valve:
The 4-Way Valve is the main control, five port valve located on the Air Feed Unit. If the saw is sticking in the up or down position, the spool located in the valve probably is not shifting from side to side as necessary. This condition is caused by unclean air passing through the system. The internal parts become gummed up, and the air pressure can no longer shift the spool. A broken spring in the valve is another common cause. A 4-Way Valve Repair Kit, P/N B3P76 is available for the valve.

Air Hold Down Clamps for the Material:
Both Horizontal Air Vises or Vertical Air Clamps are available and can be purchased as an optional accessory. These clamps pneumatically hold the material in place when the saw blade is cutting the material. If clamps are not purchased, the operator *MUST HAND HOLD THE MATERIAL*. The clamps are controlled by a 3-Way Valve mounted on the bottom of the Power Feed Unit. When the machine is in the rest position, the Upstroke Stud contacts the 3-Way Valve, LV1. As soon as the Hand Valve is tripped, the clamps move into position. A manual shut-off for the clamps is provided should you not want to use the clamps for a particular material.

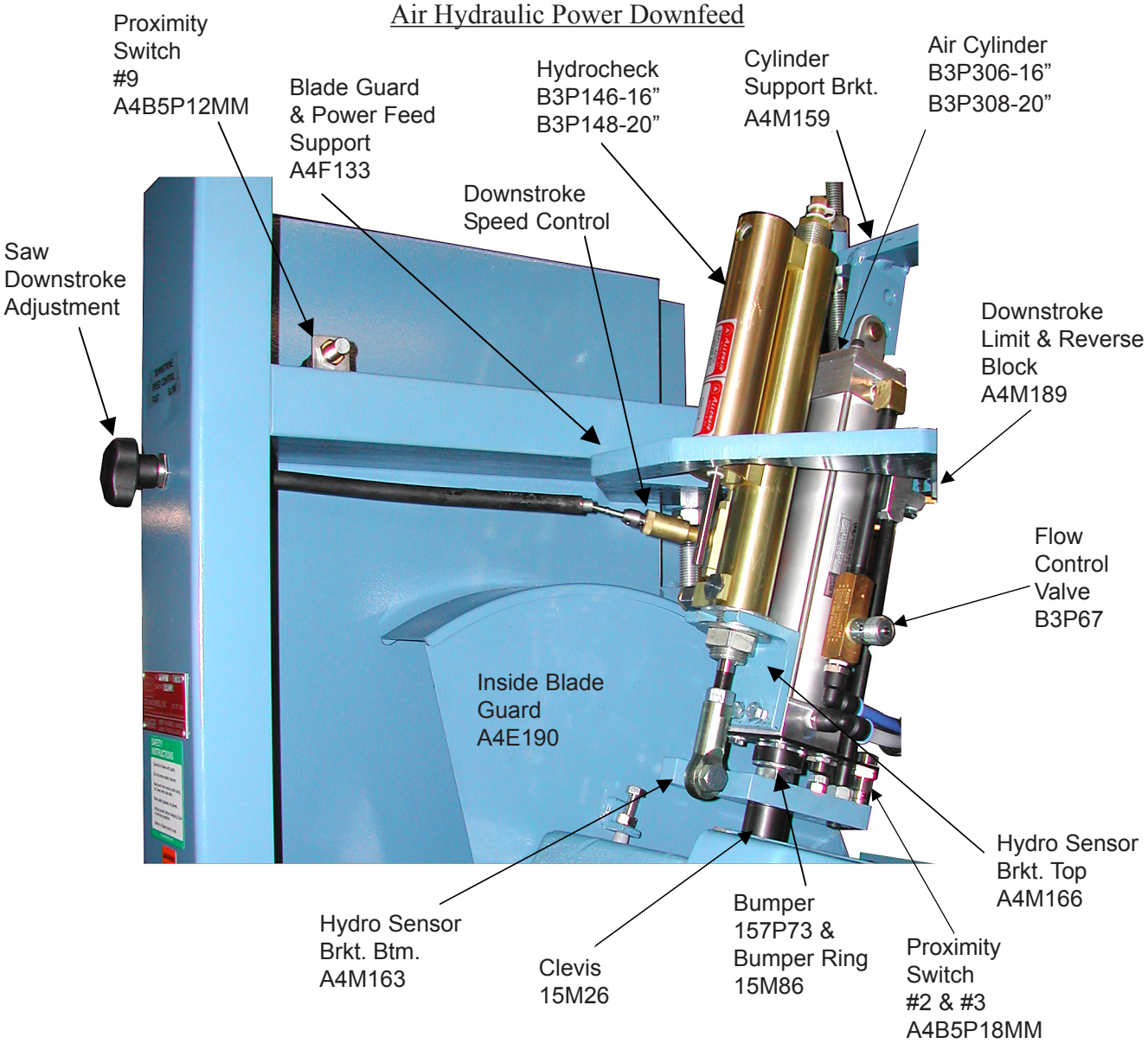
Cutting Speeds:
The rate at which the blade cuts the material varies considerably depending on the type of:
1. Material and the size of the section to be cut
2. Blade being used
3. Surface finish required
4. Speed which may be required to accomplish the cutting job

The essential thing to be remembered (regardless of what the conditions are) is that the blade must always be able to cut. The blade must never be allowed to dwell in the work. In general, the machine should be used to its greatest potential for rapidly cutting off the material.

Downfeed Adjustment Speed: A labeled knob is provided at the front of the doors to adjust the down stroke speed without opening the doors or safety covers.

An air shut-off valve has been provided at the air inlet. ***Caution, shut off air supply prior to adjustment or repair.***
The blade is rotating at approximately 2900 RPM for 16" machines, and 2700 RPM for 20" machines. If fine surface finishes are required, a constant even pressure must be applied when cutting through the material. An Air Hydraulic Power Downfeed of the saw head has been provided.

Air Hydraulic Power Downfeed


Proximity Switch #9 A4B5P12MM
Blade Guard & Power Feed Support A4F133
Hydrocheck B3P146-16" B3P148-20"
Cylinder Support Brkt. A4M159
Air Cylinder B3P306-16" B3P308-20"
Downstroke Speed Control
Saw Downstroke Adjustment
Downstroke Limit & Reverse Block A4M189
Flow Control Valve B3P67
Inside Blade Guard A4E190
Hydro Sensor Brkt. Top A4M166
Hydro Sensor Brkt. Btm. A4M163
Clevis 15M26
Bumper 157P73 & Bumper Ring 15M86
Proximity Switch #2 & #3 A4B5P18MM

Speed Control of Blade Movement:
The downstroke speed of the blade is controlled by the Hydrocheck, P/N B3P146 or P/N B3P148 located next to the main drive Cylinder, P/N B3P306 or P/N B3P308. The Upstroke Control Valve, P/N B3P60 is located in port No. 5 of the main control Valve, P/N B3P73. Simply rotate head of valve and adjust *in* to slow down, or *out* to speed up. If not equipped with a hydrocheck, the down speed is regulated by a flow control valve (P/N B3P60) near the base of the main cylinder.

Preventative Maintenance:

The 400 Series machines are relatively easy machines to operate and maintain. Following is a weekly check list of General Maintenance items. The best preventative maintenance advise is to *CLEAN THE MACHINE DAILY*, especially around the pivot points on the machine.

Lubrication and Adjustments of Bearings:
NO LUBRICATION OR ADJUSTMENTS ARE REQUIRED. All CTD cut-off saws are assembled using sealed, prelubricated ball bearings. The spindle and pivot assembly are constructed using preloaded belleville springs. These springs eliminate the need for adjustments of bearings and also greatly increase the life of the bearings.

General Maintenance Weekly Check List:
Always disconnect electrical power and air supply.
1. Keep machine clean—especially around pivot bracket and pivot bearings.
2. Blow off and clean around the cylinder
3. Check Air Filter Bowl for water and condensation build up.
4. Remove any scrap pieces and dust build up from inside floor stand.
5. Check monthly:
   A. For excessive belt wear
   B. Make sure motor pulley set screws are tight.

Repair and Service:

Always use CTD factory authorized replacement parts and consult factory before making any repairs or adjustments which may be unclear.

Fence Alignment and 45° Angle Adjustment of Blades:
All machines are preset at the factory for perfect 90° and 45° mitre cuts. If any adjustments are necessary:
1. Check alignment of fences—left to right as shown in Diagram "E" on Page No. 7. Use a two foot steel scale or quality precision straight edge and lay flat on table base. Butt edge against fence bracket and long measuring gage (if purchased). Touch the outside corner of the straight edge. If one side of the straight edge pulls away from the fence, then the long fence gage is not in alignment with the Right Fence, P/N 400M05.
2. Loosen 3/8-16 lock nut on Left Fence Bracket, P/N 41C04L and Fence Support Angle, P/N BF16. Clean all surfaces of dirt or dust, and re-assemble as before (see Diagrams "A" & "B" on Pages No. 3 & 4).
3. Re-align right fence to left fence with your straight edge. Once you are sure both fences are in alignment, you now have a reference point to check your 45° mitre.

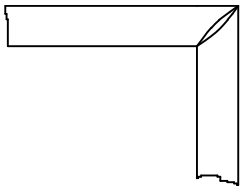
Safety Instructions to the Operator:

1. *KNOW YOUR CTD SAW.* Read this instruction manual carefully. Learn the operation, application, and limitations, as well as the specific potential hazards peculiar to this machine.
2. Avoid accidental starting. Make sure switch is **OFF** before plugging in power cord. A Magnetic Starter (which is OSHA required by user) is provided standard on the machine to give the operator added protection.
3. *Always* use a plug equipped with a ground.
4. *Always* keep blade guard in place. Do not wire-up or chain-up, so that blade is exposed.
5. Be sure all unnecessary tools are removed from machine before turning on power.
6. Use safety goggles. Also use a face or dust mask if operation is dusty.
7. Support work. To maintain control of work at all times, it is necessary that material be level with cutting surface.
8. Wear proper apparel. Do not wear loose clothing or jewelry. Do not wear a tie or gloves. These items can get caught in the moving parts of the machines.
9. Do not over-reach. Keep your proper footing and balance at all times.
10. Maintain your machine in top condition. Use proper blades. Clean machine weekly for proper maintenance.
11. Keep work area clean. Cluttered areas, benches and slippery floors invite accidents.
12. Avoid dangerous environments. Keep work area well illuminated.
13. Wear ear protection if exposed to long periods of very noisy shop operations.
14. Keep visitors away. All visitors should be kept a safe distance from work area.
15. Do not force the machine. The saw will do a better job and be safer to operate at the speed for which it was de signed. Forcing the saw can be very hazardous to the operator.
16. Use recommended accessories. Use of other acessories may be hazardous. Use this instruction manual or consult CTD for the proper accessories available.
17. Do not drown the blade using a steady stream of coolant when cutting non-ferrous material. Only spray the work to cool it.
18. Be sure to use the proper blade for the particular material to be cut.
19. Disconnect power cord before adjusting, servicing, and before changing belts, or for installing accessories.
20. Safety is combination of operator *COMMON SENSE* and *ALERTNESS* at all times when the machine is being used.
21. *WARNING!!! DO NOT ALLOW FAMILIARLITY (GAINED FROM FREQUENT USE OF YOUR SAW TO DULL YOUR AWARENESS!! ALWAYS REMEMBER THAT A CARELESS FRACTION OF A SECOND IS SUFFICIENT TO INFLICT SEVERE INJURY!!*

How to Operate the Model A500:
The control of all functions on the A500 are accomplished using a tablet PC(Windows 7 based) controller. The controller receives signals from various switches and sensors and returns commands to proceed with its programmed commands. When powered up each day, the PC will indicate a desk top screen as you would see on a home or office computer. On the desk top, you must find the icon for Razor Gage program and double clinc on the left button on the mouse to launch the program. Once the program is launched and it starts to go through its self diagnosis and communication protocols and finds all to be okay, then the homing task must be carried out. A button on the screen indicating homing must be pushed to home the actuator. Once the Razor gage is homed, the main screen of the Razor Gage program will show up on the screen. Please refer to the Razor gage manual at the back of the instruction manuel for further instructions on the software.

How to turn on the motor.
Powering on the saw motor is separate from turning on the razor gage control unit. The controls for the motor are on the machine stand with all the components housed in a panel within the stand. There are sensors on the guard access door that need to be engaged(door closed) for the operator to turn on the saw motor. The start button on the front panel turns on the motor and the red e-button turns off the motor. Below the start button, there is a disconnect dial switch to be used when the operator has a long period of non use, such as at the end of the work day, during storage and when the machine is being worked on. Turn the disconnect switch to the “off” position and install lock whenever someone is working on the machine such as changing blades, cleaning the inside of the machine, or changing broken parts.

Irregular Mitres:
Irregular mitre cuts are almost always caused by out-of square material. Check your material with a 90° square and a straight edge. Material that has a high spot on the bottom will move, or roll forward as it is being cut (even with pneumatic hold down clamps), thereby causing the blade to cut more on the inside of the moulding than the outside. Another cause of irregular mitre cuts is to thin a blade plate thickness. Blade plate thickness should be .120 to .130 on 16" blades and .150 to .160 on 20" blades. Blades will find the easiest avenue to cut through material, and sometimes the blade plate will distort when cutting heavier sections. The drawing is an example of a cut when blade plate is too thin for the material being cut.

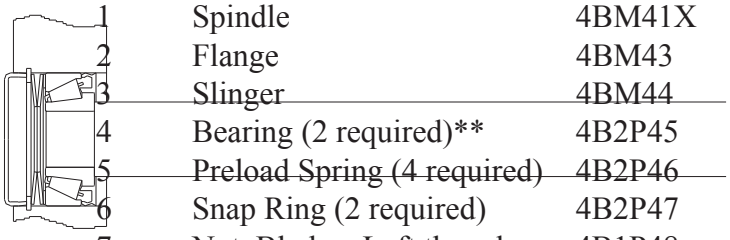


Other Repairs:
See specific areas within the manual for additional information on repairs and maintenance.

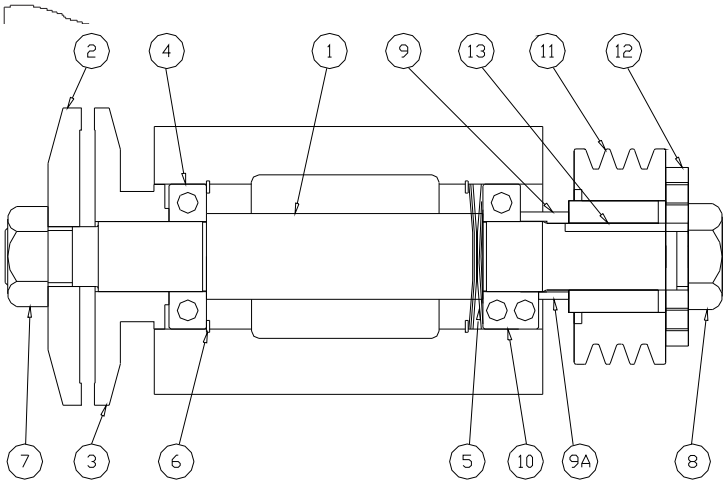
Pivot Shaft Assembly for 400 Series:
The Pivot Shaft Assembly is engineered to practically eliminate any maintenance during the life of the machine. The diagram of the assembly is for reference only.

4B2P23 Preload Spring (2 required)
4B2P21B Outside Bearing Closure (2 required)
4B2P26 Pivot Spacer Washer (1 required)
4BM20 Pivot Shaft
4B2P22 Snap Ring (2 required)
4B2P24 & 4B2P25 Bearing Assembly & Bearing Cup (2 required)

400X SPINDLE ASSEMBLY



No.	Description	Part No.
1	Spindle	4BM41X
2	Flange	4BM43
3	Slinger	4BM44
4	Bearing (2 required)**	4B2P45
5	Preload Spring (4 required)	4B2P46
6	Snap Ring (2 required)	4B2P47
7	Nut, Blade—Left thread	4B1P48
8	Nut, Jam—Right thread	4B1P49X
9	Spacer	4BM50X
9A	Spacer (for 15 HP)	4BM51X
10	Bearing, Double Row (for 15 HP only)	4B2P45C
11	Spindle	B4P2AK30
12	Bushing, Pulley	B4PP118
13	Key, Pulley	4BM23A
14	4B4P3V580BELT	12F40



** Use two #4 bearings are for 7.5 H.P and 10 H.P. motors. Use one #4 and one #10 bearing for 15 H.P. motor.

Part No. **4BM40X Spindle Assembly** consists of the following parts assembled together with the face of the slinger ground:

A. Spindle, No.1
B. Bearings, No. 4 (2 each)**
C. Slinger, No. 3
D. Flange, No. 2

Note: Items 1-4 are assembled, items 5, 6, 7, 8, 9 & 13 are included Spindle Assembly, but are shipped loose.

400X Spindle Assembly and Bearing Installation Instructions:

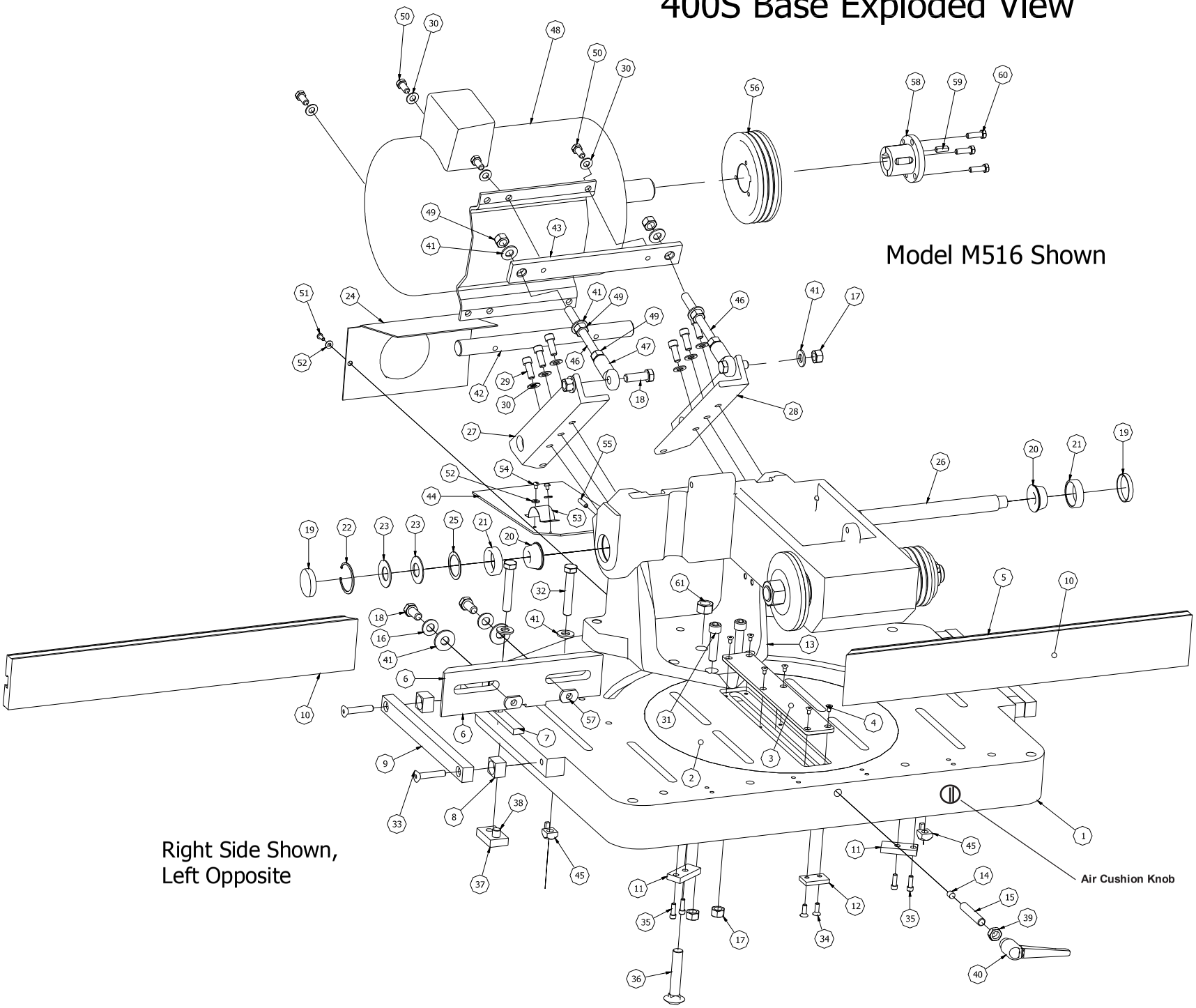
Refer to Spindle Diagram on previous page.

Spindles are assembled using a fool-proof, tamper-proof snap ring assembly. The preload belleville springs automatically provide the exact bearing preload necessary for continued high performance and long life of the bearings. There are no adjustments needed. The outer race of the bearings are a tight *slip-fit* in the housing of the arm. The inner race is a *press fit* on the spindle. It is suggested that replacement spindle assemblies be purchased from CTD before disassembly. The old spindles can be returned for bearing replacement and slinger facing for a nominal charge. If replacement spindle assemblies are not on hand, a machine shop service must be available for replacement of spindle bearings. Read and understand the following instructions before disassembly. *Great care must be taken with ball bearings* or the life of the bearing will be reduced.

To Remove Spindle Assembly:

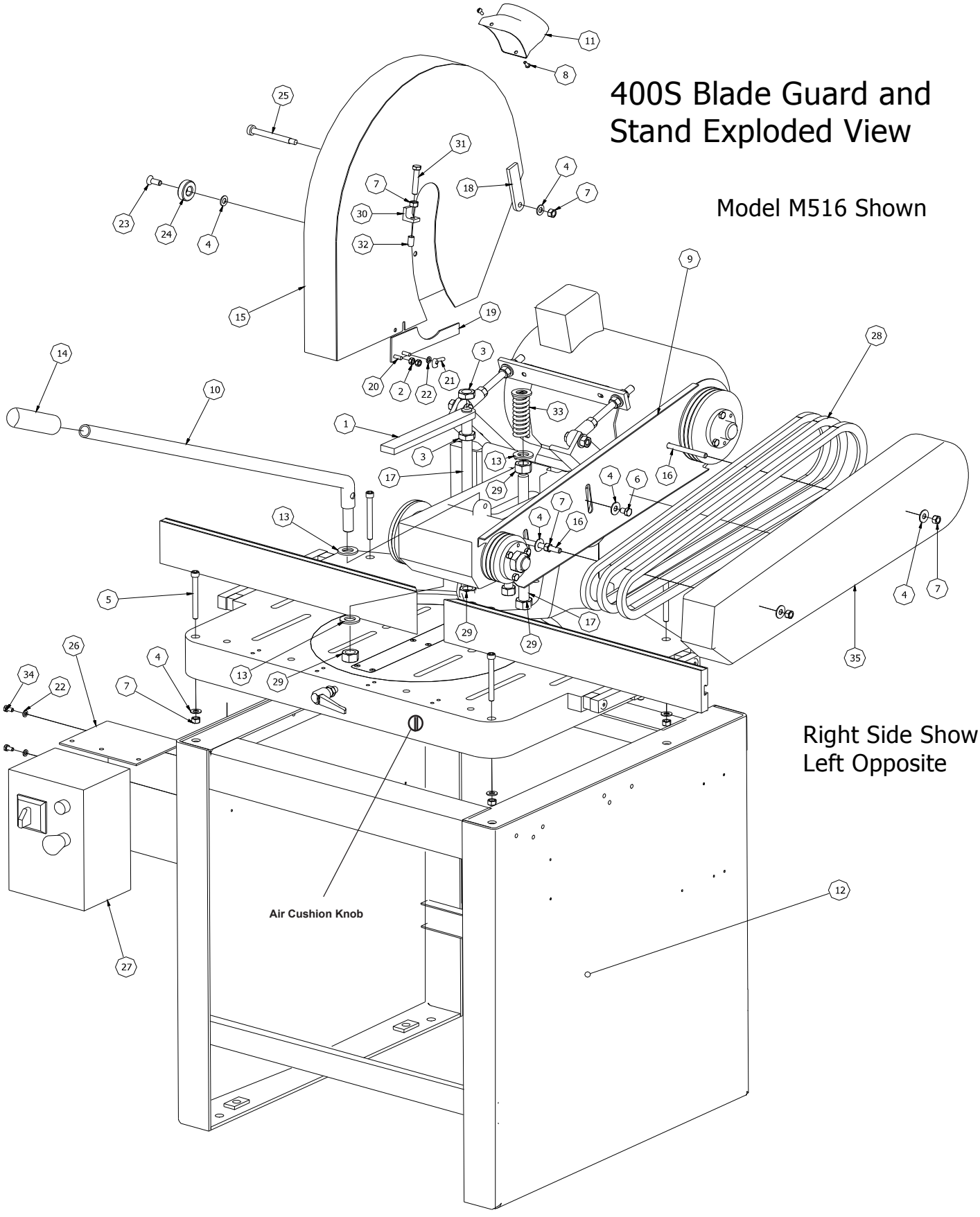
A. Remove Nut #8 by holding pulley bushing, and remove Pulley #11. In most cases, the 400X Spindle is assembled using a split tapered bushing which compresses onto the shaft. This bushing is bolted to the pulley with bolts usually located at #12. These bolts also act as jackscrews. By transferring them to the tapped holes in the bushing, they will force the pulley off of the bushing—at which time both the pulley and bushings may be removed from the spindle. Partially re-assemble nut to protect threads on spindle.
B. With soft hammer, gently drive spindle towards blade side. Take care to protect pivot bearings by holding arm casting on blade side to overcome effects of hammer blows.
C. Spindle Assembly, consisting of Spindle #1, Slinger #3, and Blade Bearing #4, will come out of housing. Pulley bearing will slip out from pulley side. Normally it is the pulley side bearing that fails first. If replacement Spindle Assembly was purchased, go to "G".
D. If the bearing on the blade side must be replaced, an arbor press must be used to disassemble the bearing and slinger from the spindle. Great care must be used in disassembly or the spindle will be scored and stripped by the slinger. Before pressing apart, scribe a line on the face of the spindle and slinger so that they will be re-assembled exactly in the same position in relation to each other.
E. Upon re-assembly of blade bearing and slinger, the face of the slinger must be checked to make sure the face (next to the blade) is running true.
F. If face is not running true, it should be refaced. Partially assemble pulley bearing on spindle. Hold outer races of both bearings in vise lightly and use side of a surface grinder wheel to dress face, by rotating spindle in bearings slowly against direction of grinding wheel.
G. Be certain before re-assembly of spindle in arm that Springs #5 are assembled as in diagram. To re-assemble spindle assembly, slip assembly consisting of Spindle #1, Slinger #3 and Bearing #4 into arm housing up to snap ring.
H. Make sure Belleville Springs are assembled properly. Install Pulley Bearing #4 , for 7.5 or 10 H.P. motors and bearing #10 for 15 H.P. motor, onto spindle as far as possible, then Spacer #9.
I. Put Pulley Key #13 into shaft keyway.
J. Place Pulley #11 onto Bushing #12 and slide onto shaft. Install Nut #8.
K Hold pulley bushing with pipe wrench and tighten nut which will press Bearing #4 (for 7.5 & 10H.P. motors and #10 for 15H.P. motor) onto shaft. Tighten until bearing bottoms out against shoulder of bearing seat.
L. Install three bolts to pulley bushing located at #12 in diagram. Tighten evenly.
M. *Belt tension is of critical importance*. To get proper tension, press down on top of belts with a moderate amount of pressure (five pounds). The belts should deflect about 1/2 inch.
N. If motor must be moved, centerline of shaft and spindle must be parallel. Both pulleys must be in line or belts will not wear evenly. This should be checked by placing a straight edge across both pulleys.

400S Base Exploded View



400S Blade Guard and Stand Exploded View

Model M516 Shown



Right Side Shown,
Left Opposite

400S Blade Guard and Stand Parts List

Model M516 Shown

Parts List								
ITEM	QTY	PART NUMBER	DESCRIPTION	F526	M416	F426	DM400	PF400
1	1	4BM68	Blade Guard Guide	X	X	X	X	X
2	2	1/4-20 Hex Nut	Blade Guard Strap Locking Nut	X	X	X	X	X
3	2	3/4-10 Hex Jam Nut	Blade Guard Guide Locking Nut	X	X	X	X	X
4	11	3/8 Washer	3/8 Washer	X	X	X	X	X
5	4	3/8-16 x 3.5 Socket Head Bolt	Base Casting Locking Bolt	X	X	X	X	X
6	1	3/8-16 x 3/4 Socket Head Screw	Belt Guard Back Plate Locking Screw	X	X	X	X	X
7	10	3/8-16 Hex Nut	3/8-16 Hex Nut	X	X	X	X	X
8	2	10-32 x 1/2 Slotted Round Head Mach. Screw	B. G. Dust Outlet Locking Screw	X	X	X	X	X
9	1	4BF09X	Belt Guard Backing Plate	X	X	X	X	X
10	1	4BF10	Handle	X	X	X		
11	1	30A12-20" / 30A12-16"	B. G. Dust Outlet 4"	30A12-20"	30A12-16"	30A12-16"	30A12-20"/16"	30A12-20"/16"
12	1	41F06	Floor Stand	X	X	X		X
13	3	3/4 Washer	3/4 Washer	X	X	X	X	X
14	1	4B7P11	Handle Grip	X	X	X		
15	1	4BE13/4BE12	16" / 20" Blade Guard Assy.	4BE12	4BE13	4BE12	4BE13/4BE12	4BE13/4BE12
16	2	4B1P11	Belt Guard Stud	X	X	X	X	X
17	2	4BM28	Stop Stud Spring	X	X	X		
18	2	4BM11	Blade Guard Ear	X	X	X	X	X
19	1	6F07B	Bottom Blade Guard Strap	X	X	X	X	X
20	2	1/4-20 Pem Stud	1/4-20 Pem Stud	X	X	X	X	X
21	1	1/4-20 Wing Nut	1/4-20 Wing Nut	X	X	X	X	X
22	3	1/4 Washer	1/4 Washer	X	X	X	X	X
23	1	3/8-16 x 1 Flat Head Screw	B. G. Bearing Locking Screw	X	X	X	X	X
24	1	2B2P05	Blade Guard Roller Bearing	X	X	X	X	X
25	1	3/8-16 x 3.5 Shoulder Bolt	Blade Guard Pivoting Bolt	X	X	X	X	X
26	1	BF96	Magnetic Starter Bracket	X	X	X	X	X
27	1	B5P7.5H3Q230V/CH	7.5HP 230V Mag. Starter #18 7.5HP 460V Mag. Starter #16 10HP 230V Mag. Starter #21 10HP 460V Mag. Starter #19 15HP 230V Mag. Starter #23 15HP 460V Mag. Starter #20	X	X	X	X	X
28	3	4B4P3V630	3V630 Belt	X	X	X	X	X
29	4	3/4-10 Hex Nut	3/4 Hex Nut	X	X	X	X	X
30	1	4BM13	Blade Guard Angle Stop	X	X	X	X	X
31	1	3/8-16 x 2 Hex Bolt	Stop Bolt	X	X	X	X	X
32	1	400S Crutch Tip	Stop Bumper	X	X	X	X	X
33	1	4BM32	Return Spring W/Washer	X	X	X	X	X
34	2	1/4-20 x 1/2 Hex Bolt	Mag. Starter Bracket Locking Bolt	X	X	X	X	X
35	1	4BF08X	Belt Guard	X	X	X	X	X

Parts List

Base, Disc, and Fence Parts:

41C01	M416/M516 Base
41C02	M416/M516 Disc
41C04L/R	Fence Bracket, Left & Right
41E51	M416/M516 Base, Disc & Stand Assembly
41F06	400 Series Floor Stand
41M03A	Disc Support, Side
41M03B	Disc Support, Front
400M05L/R	M416/M516 Fence, Left & Right
41M07	Fence Key Spacer
41M08	Fence Key Support
41M09	400 Series Fence Key
41M10	M416 Fence Nut, Special
41M11	Tab Nut
9B7P38	Mitre Lock Handle
42C01	F426/F526 Base
42E52	F426/F526 Base & Stand Assembly
400M02	F426/F526 Fence
B1P1213	1/2-13 Tee Nut

Clamp and Vise Parts:

400M20	400S Vertical Cylinder Bracket, New Style
4B3P20	Vertical Clamp Cylinder, Light Duty
4B3P30C	Vertical Clamp Pad Assembly, Light Duty
4BF90	Vertical Air Vise Bracket
4B7P20	Quick Action Vise, Large
4BM96	Pad for Quick Action Vise
4BM97	Base for Quick Action Vise
4BM91	Air Vise Jaw
4BM92	Air Vise Base, Angle
4BM93	Fence Support with HAV
B3P243	Vertical Air Vise Cylinder
B3P246	Horizontal Air Vise Cylinder

Arm, Pivot Shaft and Head Parts:

4BC01	400 Series Arm
4BC02	400 Series Pivot Bracket
4BE100	400 Head Assembly, 16”
4BE100-20”	400 Head Assembly, 20”
4BE50	Arm & Pivot Assembly, no spindle
4BM03LX/RX	Angle, Motor Mount, Left & Right
4BM04X	Rod, Motor Mount Pivot Shaft
4BM05X	Cross Bar, Motor Mount Adjustment
4BM07X	Chip Deflector Plate
4B6S13	7-1/2 H.P. TEFC Motor
200B2P80	Rotating Rod End Motor Mount
4BM06	Motor Mount Adjustment Rods (2)

Blade Guard and Belt Guard Parts:

4BE13	16” Blade Guard Assembly
4BE13S	16” Blade Guard Assembly w/SLS
4BF12	20” Blade Guard Assembly
4BE12S	20” Blade Guard Assembly w/SLS
4BM68	Blade Guard Guide
6F07B	Bottom Blade Guard Strap
30A12	Rear Blade Guard Dust Outlet
4BF08X	Belt Guard
4BF09X	Belt Guard Backing Plate

Miscellaneous Parts:

4BF10	400 Series Handle
4BF30	Rear Dust Outlet
4BM32	Return Spring w/Washer
4BM31	Downstop Block 400 Hand Operated
4BM223-6’	6’ Extended Fence-extrusion 3.5” H
4BM224-10’	10’ Extended Fence-extrusion 3.5” H
4BM225-12’	12’ Extended Fence-extrusion 3.5” H
400BM38	Stop for Extended Fence

Motor Warranty:
Motors which fail during the warranty period of one (1) year must be returned to an authorized Baldor Service Representative for examination to determine whether the failure was caused by defective manufacturing. In the event a replacement is required before factory examination, a motor will be sold at the list price. If the factory authorizes replacement, CTD will credit customer’s account for the replacement cost. All motors are shipped FOB CTD, Los Angeles, CA plant.

Guarantee:
CTD warrants that their cut-off machines and accessories are free from defect of material, workmanship, and title, and are of the kind of quality indicated and described in applicable specifications. The foregoing warranty is exclusive and in lieu of all other warranties, whether written or oral. CTD’s obligation under the foregoing warranty is limited to the repair or replacement (at CTD’s option) of the part which is defective in materials or workmanship for a period of one (1) year from the date of shipment to the original purchaser of the equipment. CTD’s liability to the purchaser, whether for warranties, negligence, or otherwise, shall not in any way include consequential damages, or costs of removing or reinstalling the products. All parts and machines are shipped FOB CTD, Los Angeles, CA plant.

CTD MACHINES
2300 East 11th Street • Los Angeles, CA 90021-2817
Tele (213) 689-4455 • FAX (213) 689-1255
World Wide Web: **http://www.ctdsaw.com** e-mail: **ctdsaw@ctdsaw.com**

RazorGage

Positioners ● Software ● Systems

Standard RazorGage Manual

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Assembly

1 Assemble and Install Legs

2 Align and Fasten to Saw

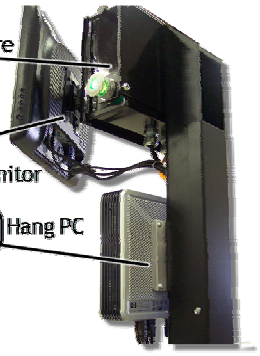
3 Install Enclosure Plate

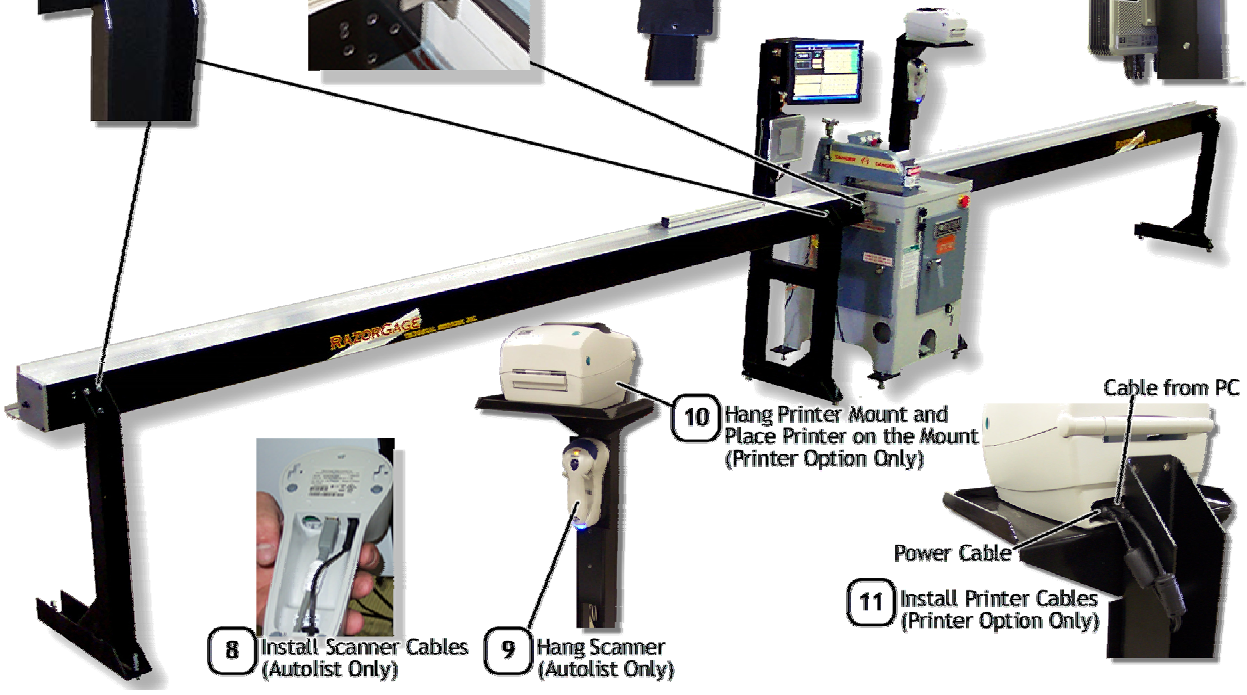
4 Install PC Plate

5 Hang Enclosure

6 Hang Monitor

7 Hang PC





8 Install Scanner Cables (Autolist Only)

9 Hang Scanner (Autolist Only)

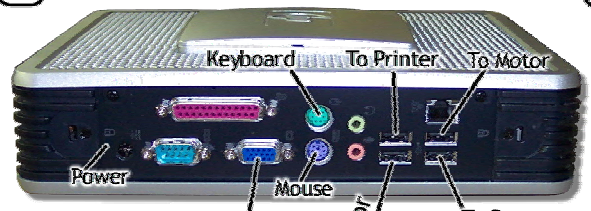
10 Hang Printer Mount and Place Printer on the Mount (Printer Option Only)

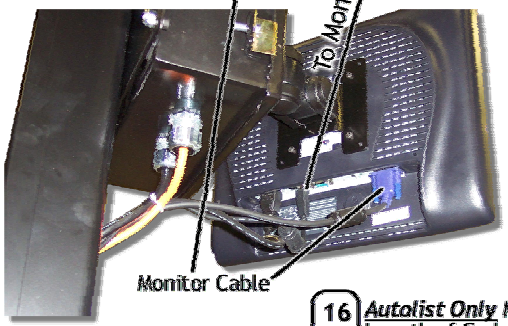
Cable from PC

Power Cable

11 Install Printer Cables (Printer Option Only)

12 Connect Cables to PC



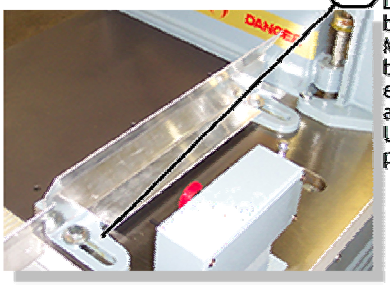


13 Route Cables Thru Leg

14 Install Cable Cover Using the Self-Tapping Screws

15 Connect PC Cable and AC Power at Motor

16 ***Autolist Only*** Modify Short Length of Code Rail to Fit behind Fence on Your Saw. Mount remaining code behind fence on either your existing infeed table or onto a RazorGage infeed table. Use Double Side Foam Tape provided.

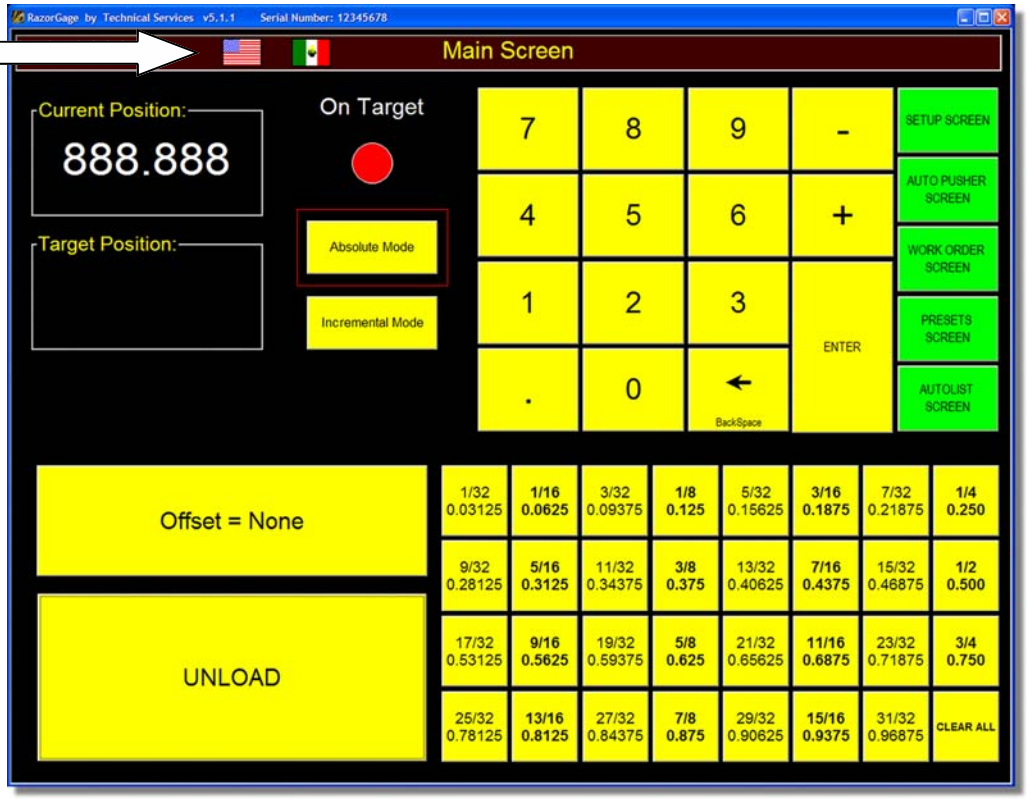


17 ***Autolist Only*** Apply Bar Code Tape Measure to Code Rail. One end of the strip is labeled 'ZERO'. Put this end closest to the saw but don't worry about aligning 'ZERO' with anything. Calibration will do that. You will need to cut the tape and apply it to other rails on your infeed table. Just be sure to keep cut ends adjacent to each other.

Power Up

When you power up the RazorGage pull the green "Power" button, then turn on the LCD Touch Screen Monitor, then finally power up the PC. When Windows XPe starts up touch the Start button in the lower left hand corner of the screen, touch the Programs button on the Start Menu, then look for RazorGage and press that. When this process is complete the PC will display the Home Screen. Press **OK** to Home. When homing is complete, this screen will appear:

Language Selection



For English display text, press the American Flag.

For Spanish display text, press the Mexican Flag

Para el ingles exhiba el texto, seleccionan la banderia americana.

Para el espanol exhiba el texto, seleccionan la banderia mexicana.

Basic Operation

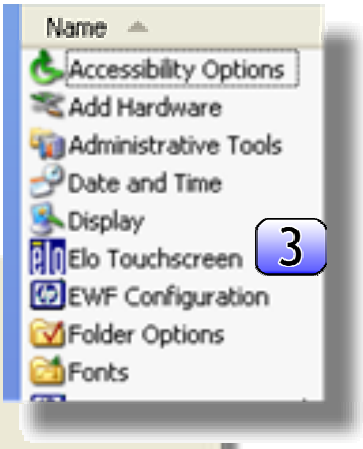
To position the stop just punch in a number, press **Enter** and the stop will go to that position. If you wish to use the fraction hot keys, just enter the whole number followed by pressing the desired fraction and the stop will immediately go to that position without pressing **Enter**

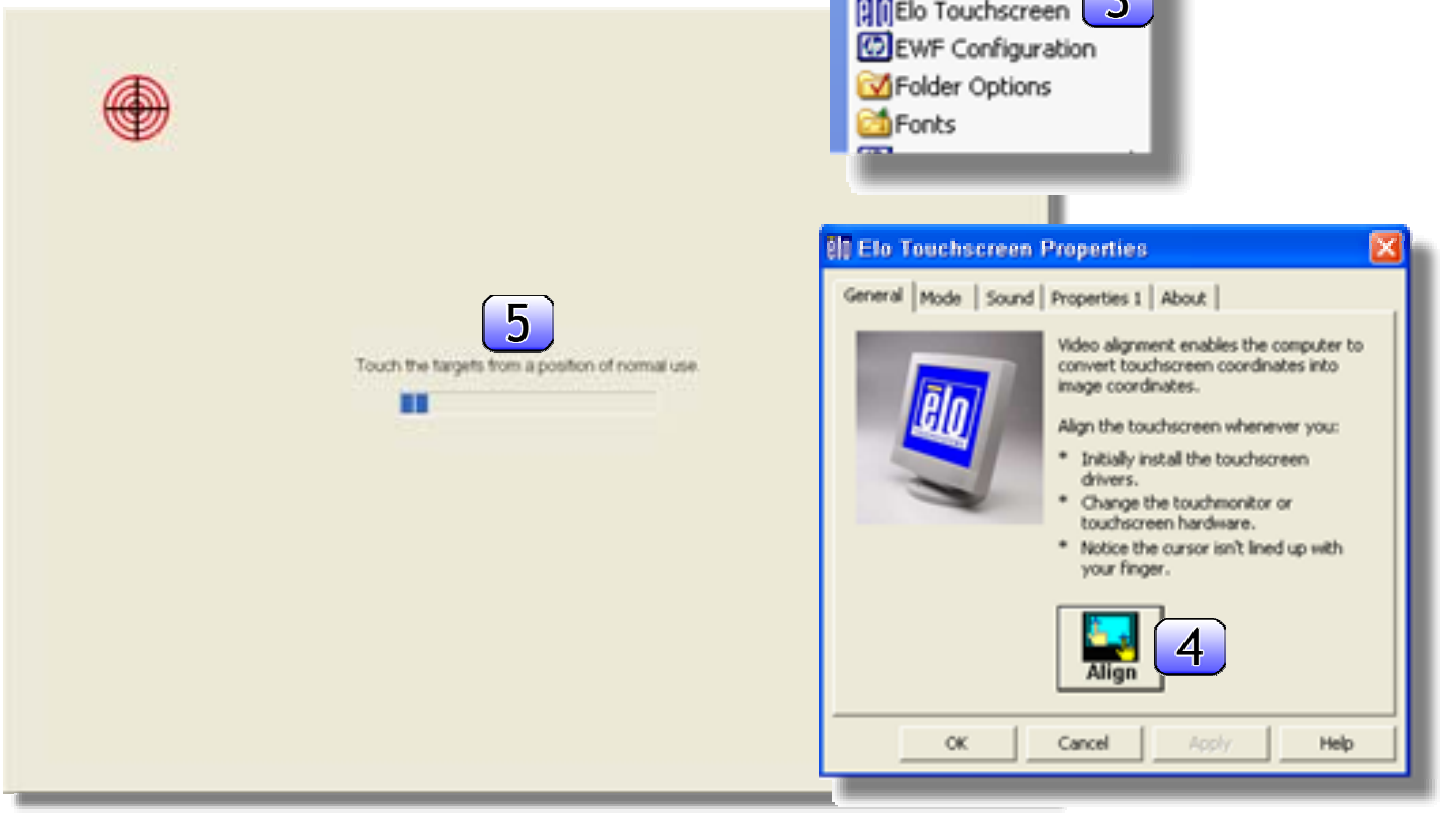
The **Unload** button makes the RazorGage stop back up for unloading small parts. Once the stop is back a screen comes up that, when touched, makes the stop move back to the previous position. Before **Unload** works, an UNLOAD DISTANCE must be entered in the SETUP screen.

Calibrate The Touch Screen

To calibrate your touch screen, follow these steps:

1. Press start
2. Press Control Panel
3. Double click Elo Touchscreen
4. Press Align
5. Follow the on-screen instructions
6. Your touch screen is now calibrated

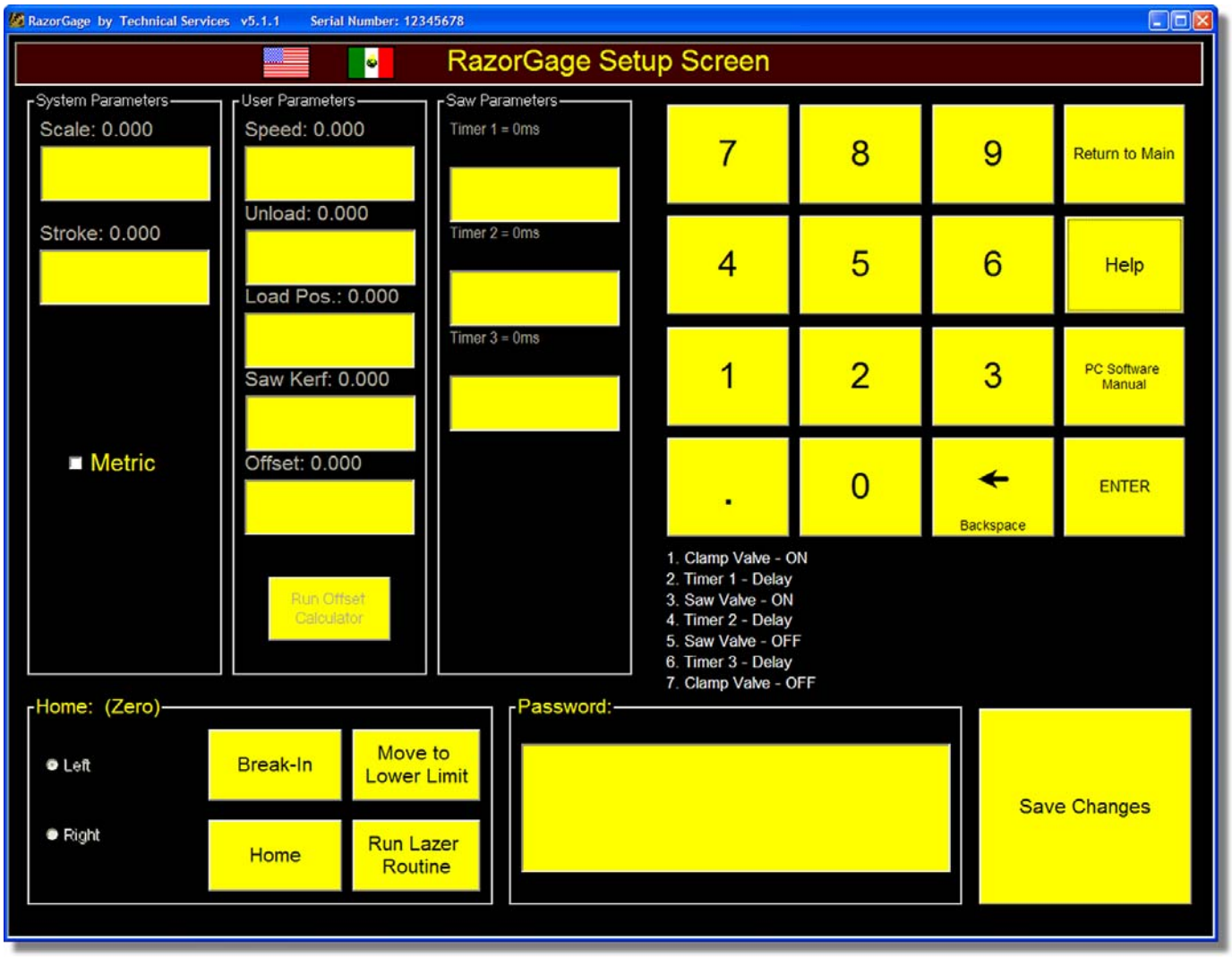




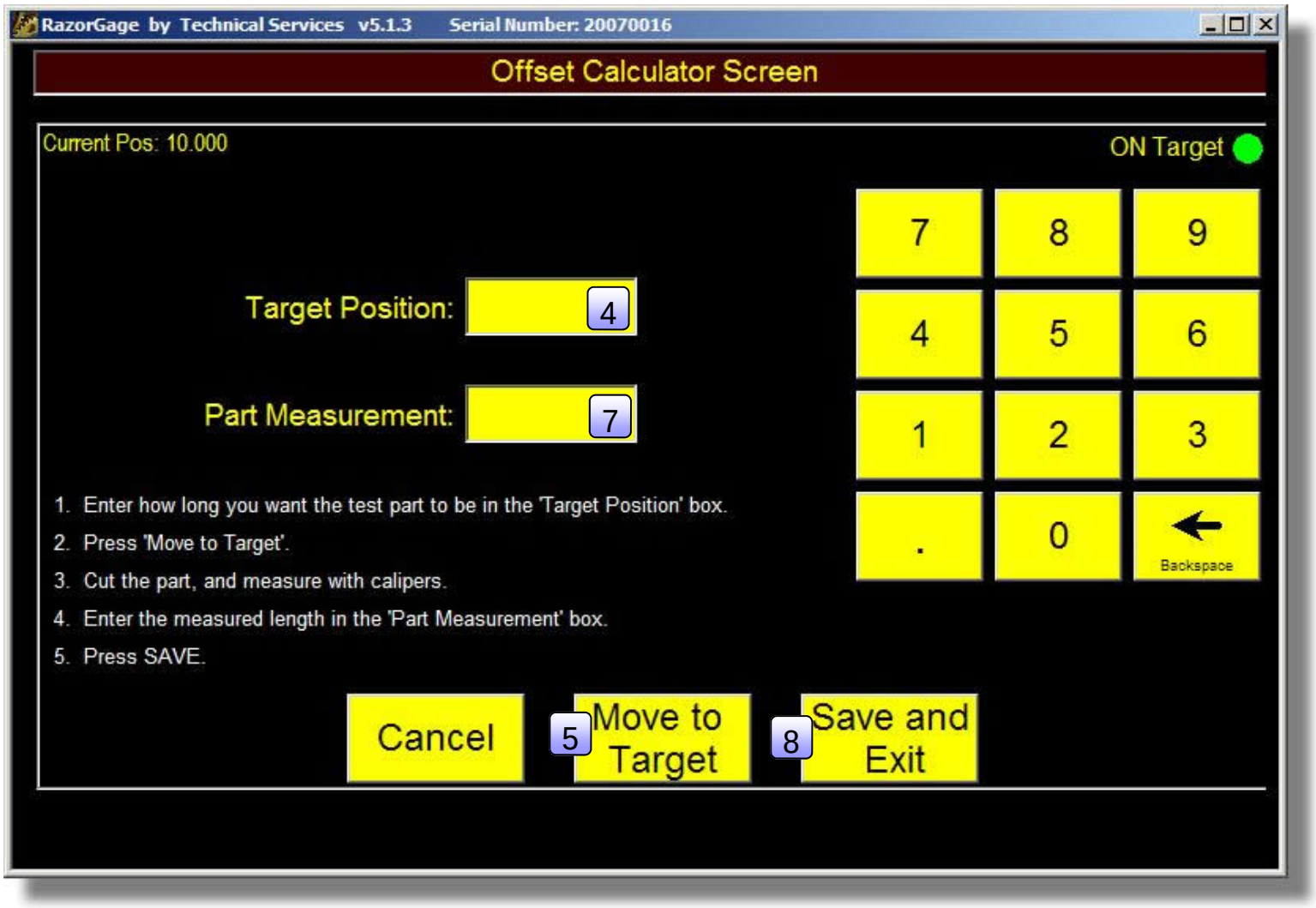
Setup Screen

The setup screen is password protected. System parameters are protected by a different password than User Parameters.

System Parameters Password: 5239
User Parameters Password: 90210



Offset Calibration



1 From the main screen, press **Setup Screen**

2 Enter the user password 90210

3 Press **Run Offset Calculator**

4 Enter how long you want your test part to be in the Target Position box

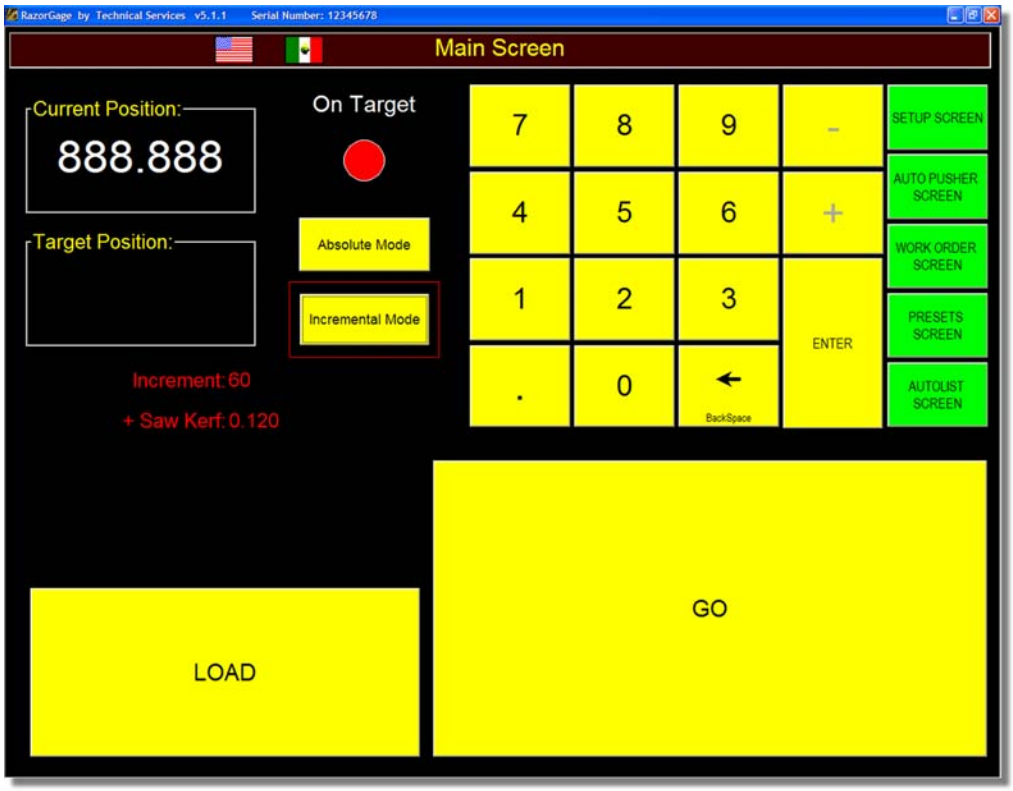
5 Press **Move to Target**

6 Cut the part, and measure with calipers

7 Enter the measured length in the Part Measurement box

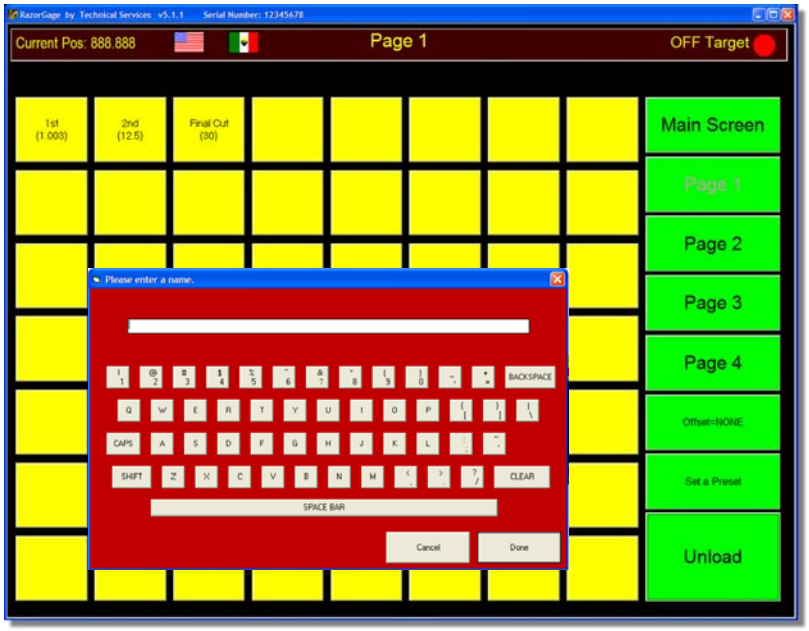
8 Press **Save and Exit** Your RazorGage offset is now calibrated.

Incremental Mode



In incremental mode the RazorGage advances the stop incrementally by the amount entered rather than going to the Absolute position you enter. In the screen above note that the increment is 60 and the saw kerf is .120. That means that when the operator presses GO the stop will advance 60.12 inches.

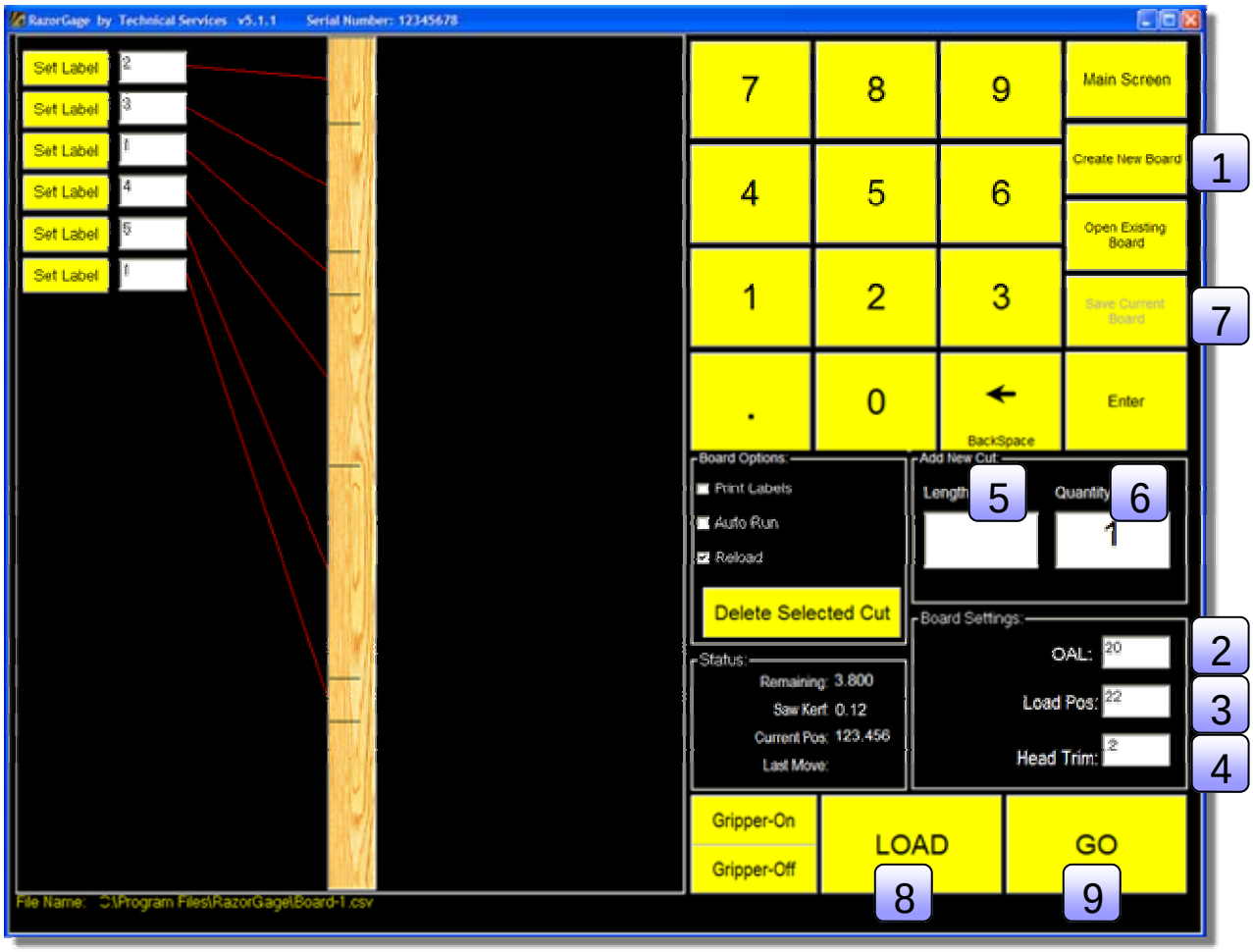
Preset Screen



The RazorGage ships with 4 preset screens like the one shown at left. Each screen has 56 programmable hot keys that may be labeled with a description and the length. To define a Hot Key just press the Set A Preset button. The screen background will turn red to show that you're in key definition mode. Press the key you wish to define and a keypad will appear in which you may enter length and label.

Auto Pusher Screen

The Auto Pusher Screen allows you to define cut routines for specific board lengths and save them to the hard drive. The number of routines one can save is virtually unlimited. See the steps below for defining a cut routine:



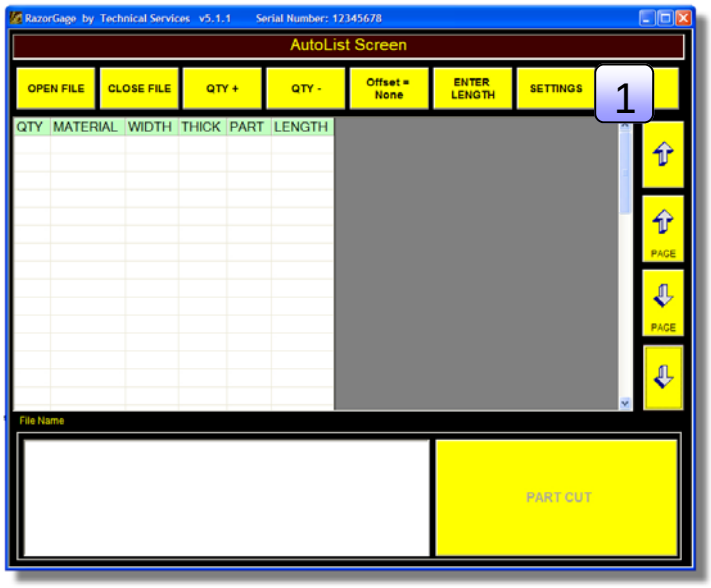
1. Press **Create New Board**
2. Punch in overall length of stock
3. Punch in the desired position you wish the stop to go for loading the stock
4. Punch in the leading edge trim amount
5. Enter the length of the first part you want to cut
6. Enter the quantity of parts of that length. Press **Enter**
7. Repeat steps 5 & 6 until done and press **Save Current Board**
8. Once a board is saved, press **Load** and the pusher will retract to the load position defined in the routine
9. When the pusher is in load position, place a board against the fence and against the pusher and press **GO**. The routine will run its pattern. If you check Auto Run and have the appropriate options, your RazorGage will cycle clamps, saw, and advance automatically.

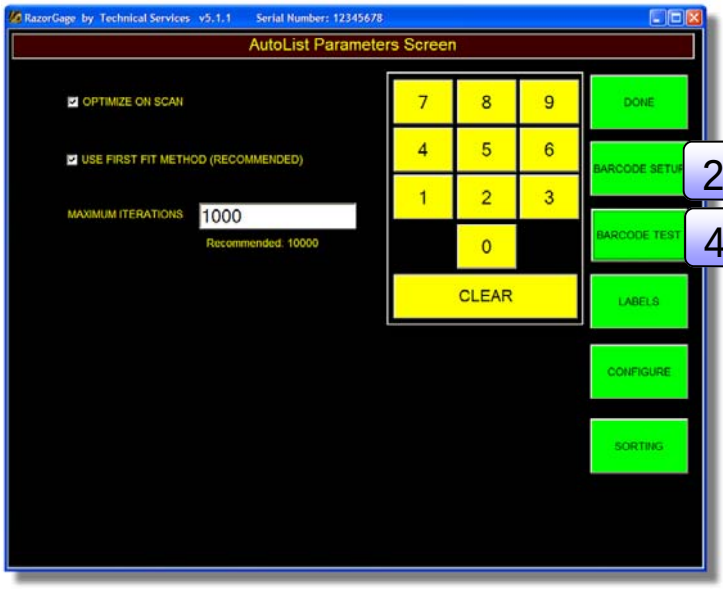
Work Order Screen

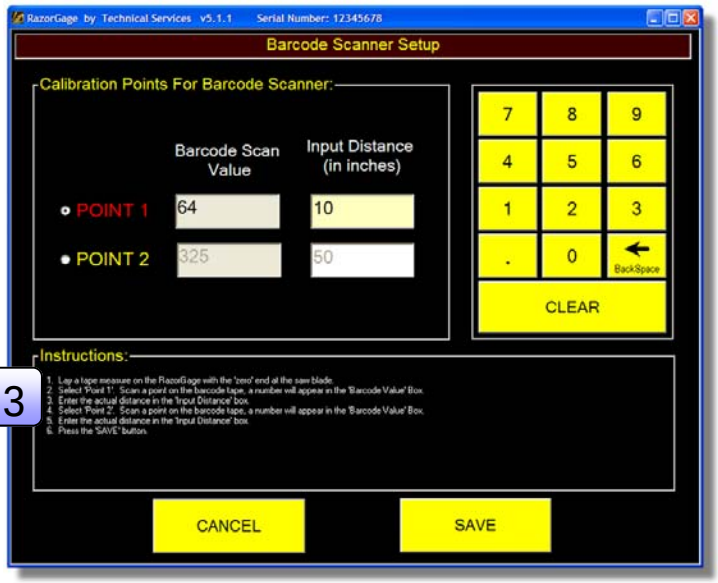
You may download workorders to your PC RazorGage with the Workorder Screen. Press the Open Workorder button to find the file you wish to open whether it is on the RazorGage PC or on a shared network drive. Select a file and press OK The headings in that file will be displayed on the left hand column of the screen and the values on the first line of the list will be placed next to their corresponding heading. If you have an existing file format you wish to use, just email it to RazorGage and we'll set up the Workorder screen to accept it. If you wish to create a file in Microsoft Excel, you just create a cut list with Line #, Legnth, and Quantity as the first three columms, then populate up to seven more columns with whatever information you want. The headings will be displayed as shown below with the data for that column next to the heading.

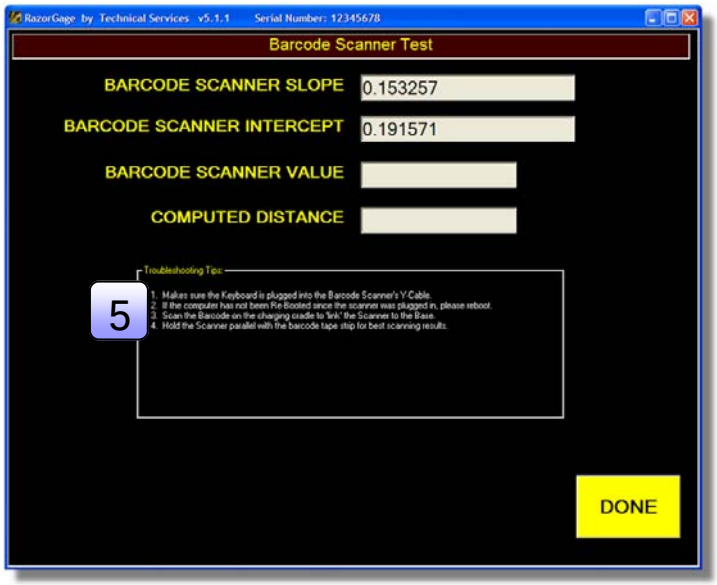
Autolist Screen

If your system has the optional Barcode Scanner, you need to calibrate it before using your Autolist system.









1 Press **Settings** on the Autolist screen

2 Press **Barcode Setup**

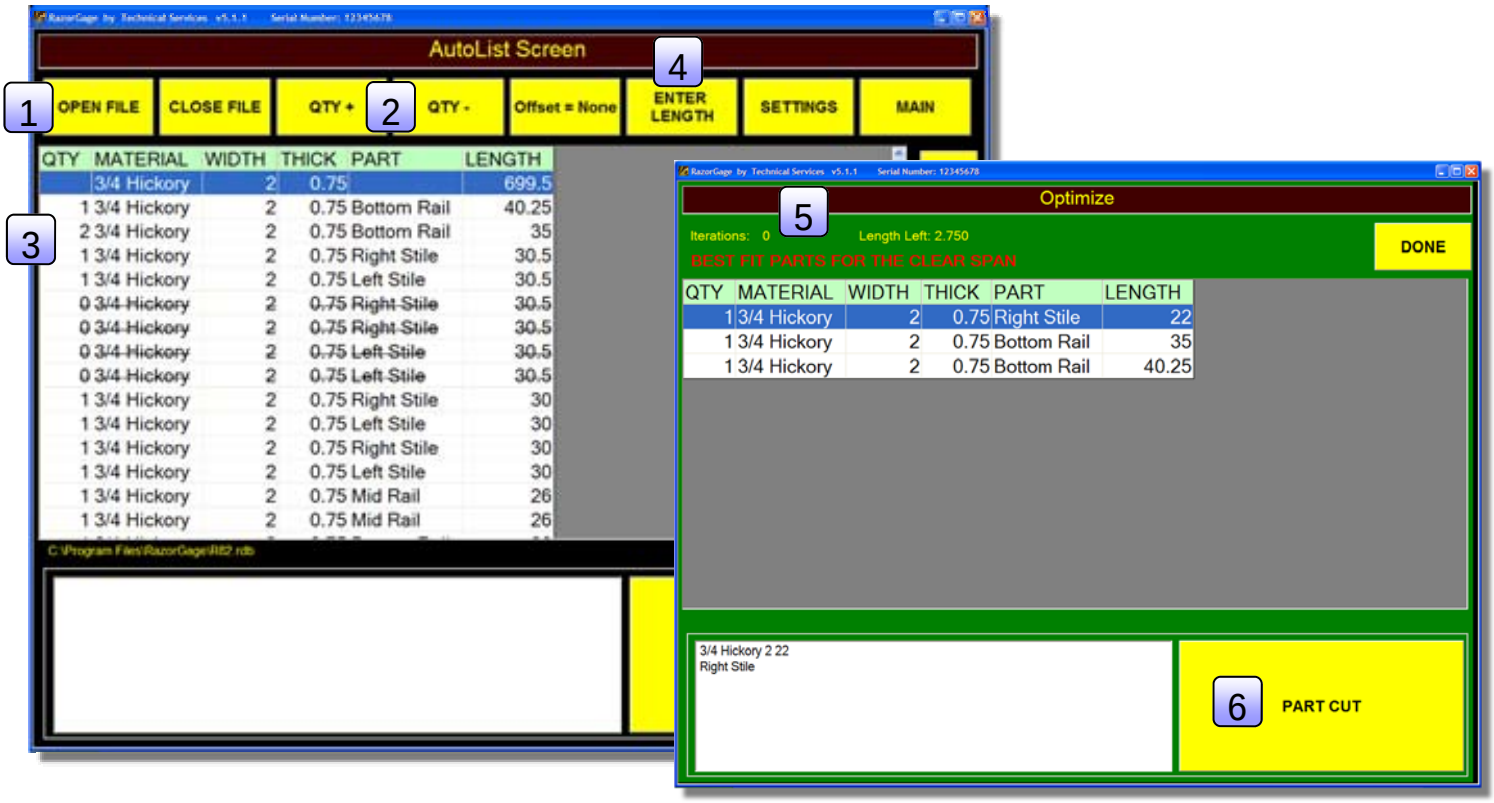
3 Follow the on-screen instructions to calibrate your barcode scanner

4 After you have calibrated your scanner, press **Barcode Test** to test your setup

5 Follow the on-screen instructions to test the calibration of your scanner

Autolist Screen

The Autolist feature uses cutlists that have been run through the Parts List Processor (See Parts List Processor Manual). The list is arranged first by material, then width, thickness, and lastly by length from longest to shortest. This is the default sorting arrangement and can be changed to fit your needs.


AutoList Screen
1
OPEN FILE
CLOSE FILE
QTY +
2
QTY -
Offset = None
4
ENTER LENGTH
SETTINGS
MAIN
3
QTY MATERIAL WIDTH THICK PART LENGTH
3/4 Hickory 2 0.75 699.5
1 3/4 Hickory 2 0.75 Bottom Rail 40.25
2 3/4 Hickory 2 0.75 Bottom Rail 35
1 3/4 Hickory 2 0.75 Right Stile 30.5
1 3/4 Hickory 2 0.75 Left Stile 30.5
0 3/4 Hickory 2 0.75 Right Stile 30.5
0 3/4 Hickory 2 0.75 Right Stile 30.5
0 3/4 Hickory 2 0.75 Left Stile 30.5
0 3/4 Hickory 2 0.75 Left Stile 30.5
1 3/4 Hickory 2 0.75 Right Stile 30
1 3/4 Hickory 2 0.75 Left Stile 30
1 3/4 Hickory 2 0.75 Right Stile 30
1 3/4 Hickory 2 0.75 Left Stile 30
1 3/4 Hickory 2 0.75 Mid Rail 26
1 3/4 Hickory 2 0.75 Mid Rail 26
Optimize
5
Iterations: 0
Length Left: 2.750
BEST FIT PARTS FOR THE CLEAR SPAN
DONE
QTY MATERIAL WIDTH THICK PART LENGTH
1 3/4 Hickory 2 0.75 Right Stile 22
1 3/4 Hickory 2 0.75 Bottom Rail 35
1 3/4 Hickory 2 0.75 Bottom Rail 40.25
3/4 Hickory 2 22
Right Stile
6
PART CUT

1. Press **Open File** Select the cutlist you wish to process.
2. If quantities need to be changed, select the appropriate row, and press **Qty +** or **Qty -** to raise or lower the quantity.
3. Select a row that matches your stock width, material, and thickness. When the row is selected, the RazorGage will move to that position.
4. Press **Enter Length** and enter the length of clear board you have. This can also be done using the optional scanner. The Autolist software will generate a list of parts for the maximum use of materials.
5. An optimized list of parts will appear. The RazorGage will move to the length of the first part in the list. When the optimized list is cut, the Autolist screen will return to where you left off.
6. Press **Part Cut** and the quantity of that part will decrement. When the quantity reaches zero, the part will be crossed out.
7. Repeat steps 3-6 for additional stock lengths.

Routine Maintenance

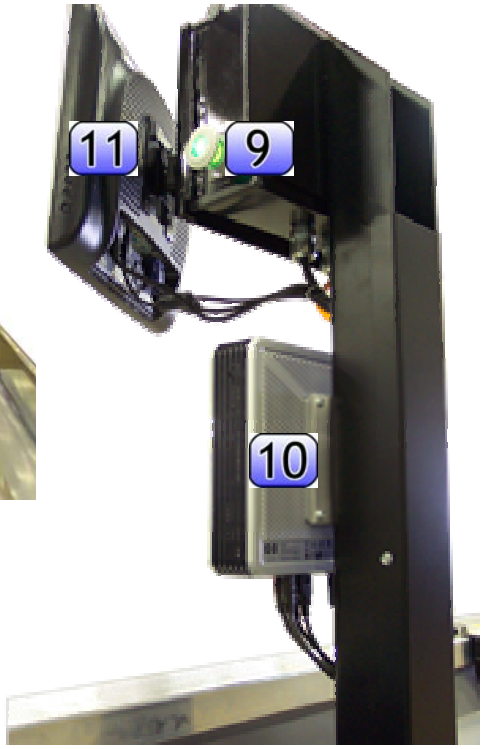
Greasing

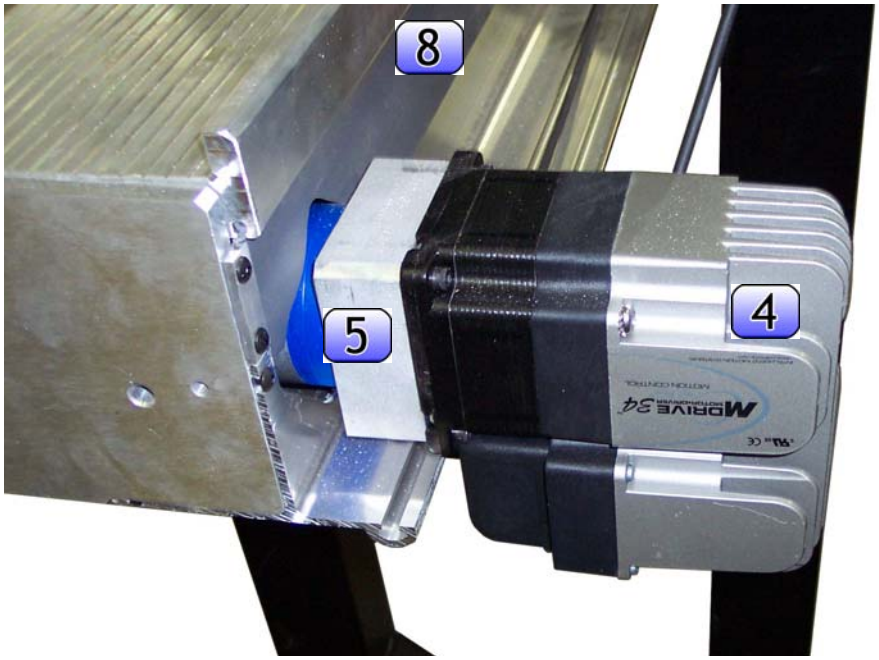
Your RazorGage is greased before shipping. The bearing rail is a one-time grease rail, so no periodic greasing is required.

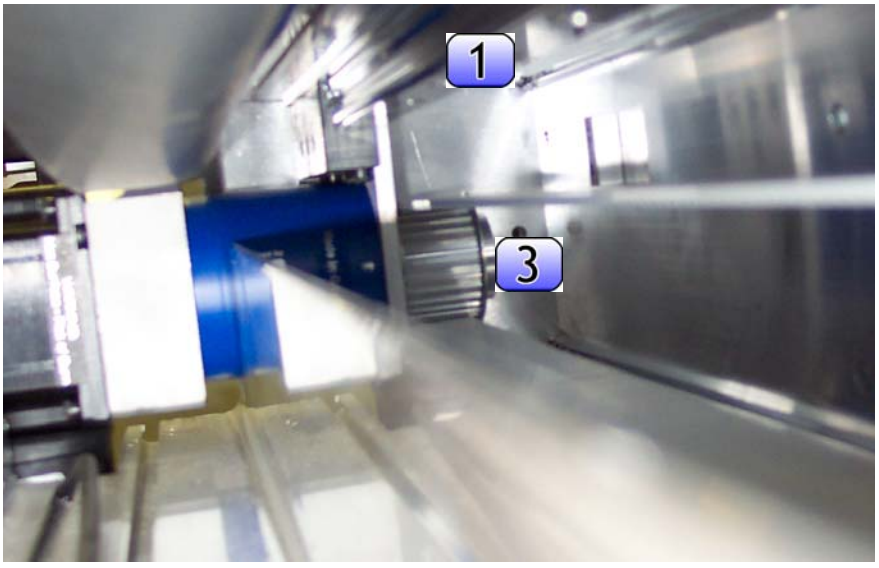
Replacement Parts

Part	Part No
Mechanical	
Bearing Rail	RG10028
Drive Belt	RG10108
Drive Pulley	RG10037
M-Drive Rotary Encoder	RG10984
M-Drive Linear Encoder	RG10985
Gearbox	RG10978
Linear Encoder Reader Head	RG10091
Linear Encoder Tape	RG10109
Idler Pulley	RG10031
Idler Block	RG10030
Dust Seal	RG10123
Electrical	
Power Switch	RG11016
Solid-State PC	RG10973
Touch Screen Monitor	RG10740
Miscellaneous	
Motor Cable (2 Meter)	RG10672
Extension Cable (USB)	RG10610
Power Cable (M-Drive)	RG10988
I/O Cable (M-Drive)	RG10987
Communications Cable (M-Drive)	RG10986
Crayons (Box of 50)	RG10844
Joystick Laser w/ Power Cord	RG10180
Flex Rated Cable for Joystick	RG10181
Ink (Black Porous) Box of 6 (Cart #4500)	RG10952
Ink (Black Non-Porous) (Cart #4600)	RG10957
Inkjet Printer	RG10951
Drills	RG10816
Drill Holder	RG10889
Drill Drive Belt (Short)	RG10936
Drill Drive Belt (Long)	RG10937

Replacement Parts







1. Bearing Rail
2. Drive Belt
3. Drive Pulley
4. Motor
5. Gearbox
6. Idler Pulley
7. Idler Block
8. Dust Seal
9. Power Switch
10. Solid-State PC
11. Touch Screen Monitor

Contact Us

Phone	515.232.3188
Fax	515.232.2953
Email	razorgage@razorgage.com
Online	http://www.razorgage.com
In Person	57006 241st Street Ames, IA 50010